Post-Cold War Conflict Deterrence

Naval Studies Board, National Research Council
ISBN: 0-309-55323-7, 244 pages, 8.5 x 11, (1997)

Post-Cold War Conflict Deterrence

Naval Studies Board
Commission on Physical Sciences, Mathematics, and Applications
National Research Council

NATIONAL ACADEMY PRESS
Washington, D.C. 1997

NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The report has been reviewed by a group other than the authors according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

This work was performed under Department of Navy Contract N00014-93-C-0089 issued by the Office of Naval Research under contract authority NR 201-124. However, the content does not necessarily reflect the position or the policy of the Department of the Navy or the government, and no official endorsement should be inferred.

Library of Congress Catalog Card Number 96-71712
International Standard Book Number 0-309-05639-X
Additional copies of this report are available from: National Academy Press 2101 Constitution Avenue, N.W. Box 285 Washington, D.C. 20055 800-624-6242 202-334-3313 (in the Washington Metropolitan Area) http://www.nap.edu

Naval Studies Board
National Research Council
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

Printed in the United States of America

PARTICIPANTS IN THE POST-COLD WAR CONFLICT DETERRENCE STUDY

Andrew J. Goodpaster, The Atlantic Council, *Chair*
Seymour J. Deitchman, Chevy Chase, Maryland, *Vice Chair*
David S.C. Chu, Rand
Paul K. Davis, Rand
Richard L. Garwin, IBM Thomas J. Watson Research Center
John C. Hopkins, Los Alamos, New Mexico
Benjamin Huberman, Huberman Consulting Group
Glenn A. Kent, Rand
Robert L.J. Long, Annapolis, Maryland
C. Richard Nelson, The Atlantic Council
Paul H. Nitze, Johns Hopkins University
Robert B. Oakley, National Defense University
W.K.H. Panofsky, Stanford, California
Thomas C. Schelling, University of Maryland
Brent Scowcroft, Scowcroft Group
William Y. Smith, Falls Church, Virginia
Helmut Sonnenfeldt, Brookings Institution
David L. Stanford, Science Applications International Corporation
John D. Steinbruner, Brookings Institution
Victor A. Utgoff, Institute for Defense Analyses
Paul Wolfowitz, Johns Hopkins University

NAVAL STUDIES BOARD

Navy Liaison Representatives

Staff

* Members who also participated in the post-Cold War conflict deterrence study.

COMMISSION ON PHYSICAL SCIENCES, MATHEMATICS, AND APPLICATIONS

THE NATIONAL ACADEMIES

National Academy of Sciences
National Academy of Engineering
Institute of Medicine
National Research Council

The **National Academy of Sciences** is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Bruce Alberts is president of the National Academy of Sciences.

The **National Academy of Engineering** was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. William A. Wulf is interim president of the National Academy of Engineering.

The **Institute of Medicine** was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Kenneth I. Shine is president of the Institute of Medicine.

The **National Research Council** was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both Academies and the Institute of Medicine. Dr. Bruce Alberts and Dr. William A. Wulf are chairman and interim vice chairman, respectively, of the National Research Council.

Preface

This report responds to a request made by RADM T.D. Ryan, USN, Director, Submarine Warfare Division, Office of the Chief of Naval Operations, in a letter sent on January 6, 1994. The letter asked the Naval Studies Board, National Research Council, to conduct a study of deterrence in the emerging post-Cold War environment, including attention to nuclear, conventional, economic, diplomatic, and other means of deterring potential adversaries in the acquisition and utilization of military capabilities, state-sponsored terrorism, and interference with international commerce and rights of free passage. The terms of reference for the study resulting from Admiral Ryan's request called for efforts in the following three areas:

- Based on the experience of the past 45 years, and with due attention to the altered environment of international security and the emerging characteristics of the U.S. Navy and Marine Corps, what constitutes a reasonable set of deterrence objectives and what metrics are available for their quantitative assessment?
- From a comprehensive evaluation of existing deterrence decision aids and simulations, as well as those adaptable to such purposes, and utilizing a definition of the appropriate elements of a deterrence decision aid, determine their adequacy as a tool for shaping the Navy's deterrence posture, and recommend means for their improvement.
- Utilizing the results of the first bulleted item above, and drawing on the results of past Naval Studies Board and related studies, evaluate the strengths and weaknesses of existing and emerging technologies and systems to carry out the various elements of the deterrence mission of the Navy and Marine Corps.

As the Board began its work on the problem, extensive preliminary effort was devoted to devising an approach that would yield credible and useful results for the highest levels of government and the Navy Department. It became clear that the Cold War concept of deterrence had become so imbedded in all aspects of the thinking of the national security community, and therefore the Navy-in terms of Cold War conditions and relationships in the international environment, U.S. understanding of the kinds of threatening activities to be deterred, and U.S. military force structure and force posture--that a study of the subject under the new post-Cold War conditions would have to go back to first principles. This meant that before starting to examine Navy and Marine Corps technology and decision aids relating to deterrence, it would be necessary to explore the meaning and the viability of the deterrence concept itself in the new environment. Only then could the subordinate technical questions posed in the terms of reference be taken up. It was therefore decided to divide the study into

two phases along these lines: first, an effort to define the meaning and the elements of deterrence under the new world conditions, and then, an examination of the significance of this new understanding of the concept of deterrence for the Navy and Marine Corps, including the technical issues raised in the terms of reference.

To carry out the first phase of the study, a special group of participants [1] was convened under the chairmanship of GEN Andrew J. Goodpaster, USA (retired), who prepared a detailed outline to guide that part of the study. The group consisted of individuals who could bring to bear from their own experience the knowledge and understanding that had accumulated over the five decades since World War II, in both the practice of deterrence and in the measurement of its effectiveness. The group explored the meaning of deterrence in the post-Cold War world, identified enduring principles for the practice of deterrence, and developed insights for new approaches to the practice of deterrence and to associated analysis, modeling, and planning.

The special group of participants met only twice and received and discussed the inputs reflected in the individual essays presented in the appendixes. They made no attempt to reach consensus on the wide variety of issues introduced. In this respect this study and report differ from what is customary in studies carried out under the aegis of the National Research Council. The study participants' discussions served the valuable purpose of clarifying the various ideas of individuals irrespective of the different views introduced and still remaining after the discussions.

The second phase of the study was carried out under the leadership of David Heebner, the Naval Studies Board's chairman, by Board members [2] with extensive experience in evaluating, inserting, and using technology in the armed forces, especially in the Navy and Marine Corps. This group also included experts in modeling and simulation and their application to problems arising in evaluation of systems and operations. The group was knowledgeable about instances in the nation's history where actions of military forces and deterrence policy interacted, and about elements of prior Board studies that could contribute to consideration of the subject at hand.

The two groups interacted to ensure a seamless connection in the results of the two phases of the study. GEN Goodpaster was appointed a special advisor to the Naval Studies Board for the duration of the study. Several members of the Board participated in the discussions by the special group of study participants, with one Board member, Seymour Deitchman, serving as GEN Goodpaster's vice chairman for that group. Richard Nelson, a member of the special group of participants, contributed to the Board's deliberations in the second phase of the study.

The chairman and the vice chairman of the special group of study participants, together with Dr. Nelson, prepared this report's first chapter,

[1] The participants in this group are listed on page iii.
[2] These members are also identified on page iv.

entitled "Deterrence: An Overview." The chapter represents the authors' summary and interpretation of the key points that emerged from the special group of participants' examination of the meaning of deterrence in the post-Cold War world. In addition, several of these participants prepared papers on different aspects of the problem of deterrence. These papers, signed by and the sole responsibility of their authors, are provided in the appendixes to this report. As a source of the richness of the ideas summarized in Chapter 1's new look at the subject of deterrence, these papers offer an opportunity for deeper understanding, and the reader is therefore urged to explore them.

It is also the case that a subject of this complexity is not easily assimilated during the conduct of urgent business in the policy-making environment. To assist in this process, GEN Goodpaster prepared a "bridging" chapter, Chapter 2, "Implications for Deterrence Policy: Tasks for Policy Makers." This chapter outlines in concrete terms the key changes from the old to the new international environment, the major challenges presented to policy makers by those changes, and the main areas in which important unresolved issues remain.

The Naval Studies Board prepared Chapter 3, "Significance of Post-Cold War Deterrence Concepts for the U.S. Navy and Marine Corps." This chapter takes up the specific questions posed in the terms of reference, listing objectives of deterrence as well as qualitative and quantitative measures by which the potential success of any deterrent action might be judged. Specific emphases in naval forces' capabilities that appear to be called for by the review of deterrence policy needs are also presented and discussed, and decision aids and their application in the deterrence context are examined.

It should not be surprising that a subject as broad and fundamental to U.S. national security posture as deterrence should call forth diverse and often contradictory views of both the concept and its implications for policy. As is pointed out in Chapter 1, many such differences remain to be resolved through experience in the international context, and in many cases resolution will await the advent of specific circumstances and the consequent need for decisions in matters of policy and application. Areas of policy requiring continuing attention are highlighted in context throughout the report. Many of the unresolved differences regarding policy were also reflected as differences of view among the study group participants. Every attempt has been made, in Chapter 1, to acknowledge such differences. Special comments made by study group participants in connection with statements in Chapter 1 are included as footnotes at the appropriate points. These views are enlarged on in the papers in the appendixes. All special study group participants and participating Board members also had the opportunity to review, comment on, and influence this, the overall report of the study.

Contents

Executive Summary

WHAT IS DETERRENCE IN THE POST-COLD WAR WORLD?

"Deterrence" as a strategic concept evolved during the Cold War. During that period, deterrence strategy was aimed mainly at preventing aggression against the United States and its close allies by the hostile Communist power centers—the Union of Soviet Socialist Republics (USSR) and its allies, Communist China, and North Korea; in particular, the strategy was devised to prevent aggression involving nuclear attack by the USSR or China.

Since the Cold War the risk of war among the major powers has subsided to the lowest point in modern history. The changing nature of the threats to U.S. and allied security interests have stimulated a considerable broadening of the deterrence concept. Current deterrence objectives include the following:

- To deter attack on the United States and its allies by external forces ranging from the armed forces of hostile nations, including "rogue" nations and diverse regional powers, to national or multinational terrorist groups acting with such nations' active or tacit support or encouragement;
- To deter similar attacks on allies with whom we have mutual security treaties;
- To deter aggression against our own and our allies' vital interests and security in areas where we have agreed those interests and security are at stake; such threats may be made against free use of the seas, airways, and space, and against key sources of vital resources essential to our and our allies' security and welfare, or they may result from the consequences of disasters to humanity caused by international or civil conflicts;
- To deter the proliferation of nuclear weapons and other weapons of mass destruction; and
- To deter the use of nuclear weapons and other weapons of mass destruction in military conflict, especially when our own and our allies' vital national security interests are at stake.

To achieve these objectives we[1] must anticipate the possibility of a hostile action, detect its potential onset, and then dissuade or otherwise deter the would be aggressor from undertaking it, by posing a credible threat of punishment that

[1] Throughout the editorial "we" is used to refer to the U.S. policy makers and decision makers who must devise and decide on deterrence actions in any particular case.

the aggressor would find unacceptable and, especially, a promise that success of the aggressive action will be denied. Sometimes the dissuasion will involve inducements to change behavior, and reassurance that the "deterree" will not be attacked.

The approach to deterrence will involve a range of activities on our part, in the political, diplomatic, economic, and military spheres, independently or in concert. A strategy of deterrence therefore could be concerned with much of the threatening or violent activity that can now affect the United States on the international scene, and deterring such activity can encompass almost all of U.S. foreign policy actions. However, the potential or actual use of effective military force will underlie all deterrence efforts-—even deterrence of actions in the economic and political areas should they appear sufficiently threatening to our security.

ENDURING PRINCIPLES IN DETERRENCE STRATEGY

Despite the changed international climate and the diffuse quality of our current security concerns, many of the principles that supported earlier deterrence strategy endure. They include the following:

- **National interests.** We must define our national interests so as to know whom we wish to deter from doing what to whom, by what means, and under what circumstances. In doing so, we must recognize that interests change with circumstances—while we might find peaceful evolution of international relationships and governments in areas of national interest acceptable, violent change in those relationships through invasion, sustained terrorist attack, or severe internal conflict can pose serious threats to our interests and those of our allies that must be deterred.
- **Credibility.** Deterrence can succeed only if the combination of threat and incentives is credible. This requires demonstrated political will, as evidenced in the willingness to sustain economic costs, to endure human casualties, and to take risks in support of the deterrence efforts. The military force invoked as part of the deterrence action must be clearly capable of achieving the promised military objectives.
- **Communication and perceptions.** The actions desired from the object of deterrence—the "deterree"—and consequences of the failure of deterrence must be communicated clearly, in terms the recipient of the communications will understand. Warnings, promises, and communications must be suited to the value system of the deterree, and must be acceptable within the value systems of the United States and its actual or potential coalition partners. They must be commensurate with values the deterree holds dear, and with the deterree's political as

avoid misconceptions or miscommunications brought about by cultural blind spots of any of the parties to the interaction.

- **Applicability.** The steps we propose to take in a deterrence action must be suited to the degree of risk to the nation and its interests. Deterrence may fail. We must decide whether the subsequent expenditures, casualties, and other consequences for the nation are commensurate with the nature and value of the interests that are threatened. This will determine the nature and degree of the deterrence actions to be taken.
- **Intelligence.** There is a need for enhanced intelligence to warn of threats to our interests while there is time for deterrence actions to be undertaken. There is a need for evaluators of intelligence data and potentially threatening situations to avoid biases derived from U.S.-oriented perspectives about ongoing events; they must understand the values and perspectives of those we seek to deter and of other potential participants in the events. A separate group of high-level analysts dedicated to thinking about strategic issues may have to be created to achieve the needed level of objectivity.

DERIVATIVE POLICIES AND KEY ISSUES

Weapons of Mass Destruction

With the heightened emphasis on deterring proliferation of all weapons of mass destruction, there has been a tendency to think about nuclear, chemical, and biological weapons all together under the "weapons of mass destruction" rubric. However, nuclear weapons remain unique in their vast and instantaneous destructive power. Passive defense against chemical and biological weapons is easier than passive defense against nuclear weapons (although we have given far less attention to protection against biological weapons than against chemical weapons, and such attention is very much needed). In an unprotected environment, chemical weapons may tend to have more localized effects. Biological weapons may take more time to make their effects felt; however, in ultimate impact they may be as devastating as nuclear weapons, or even more so. The employment and effects of all these weapons are so different from each other that each must be treated as a separate entity.

Policies Involving the Role and Use of Nuclear Weapons

The role of nuclear weapons in the post-Cold War environment is a matter of some controversy. Most agree that the threat of nuclear weapons use is appropriate to deter the threat or use of nuclear weapons against us and also

against allies protected by the U.S. shield, most of whom do not have nuclear holdings. There is an issue about the extent to which nuclear weapons can be supplanted in deterrence by the threat of using advanced, precision-guided conventional weapons against the bases of political, economic, and military power of an aggressor; the times over which the two kinds of weapons act, and their effects, differ greatly. Experts also disagree on whether it would be appropriate to invoke a nuclear response to the use of chemical and/or biological weapons. They disagree, too, on whether nuclear weapons should be used to deter conventional attacks on vital U.S. interests or on particular allies; the prospect of such need has nearly vanished with the disappearance of the NATO-Warsaw Pact confrontation, but it might arise in another context in the future. Finally, the issue of whether we should declare policies such as "no first use of nuclear weapons" remains to be resolved.

These issues involving nuclear weapons in the deterrent role await resolution as international relationships in the post-Cold War world evolve. However, nuclear weapons, at whatever numbers our treaty commitments allow, will remain a cornerstone of U.S. national security. All the other policy issues involving nuclear weapons must be resolved in ways that are compatible with that reality. Resolution of many of them will await particular circumstances in which specific decisions are needed; the decision will not necessarily be the same in all cases.

Applying Deterrence Policy

Many factors will determine specific deterrence actions as threats to our interests arise. Deterrence will usually have to act in a world setting that involves the United States in coalitions, some of them ad hoc. Thus deterrence policy and actions in specific situations will have to address the specific strategic needs and military, as well as other, capabilities of coalition partners, in addition to our own. We shall also have to decide, in any situation, whether the mere existence of appropriate military forces as background to other, nonmilitary steps—an "existential deterrent"—is sufficient to deter the threatening action, or whether movement and positioning of those forces are indicated, and if so, which forces. We shall also have to anticipate the potential need for escalation in case initial steps do not deter the onset of the threatened action, and the degree of U.S. escalation needed to deter escalation by the opponent.

Missile Defenses

Defense against ballistic missiles will remain an important element in many deterrence calculations. The extent to which the United States should develop and deploy active missile defenses remains highly controversial. Theater missile defenses, currently permitted under the U.S.-Russian Antiballistic Missile (ABM) Treaty, could be forced by the evolution of the theater-level threat to grow in capability to the point that their technical characteristics also challenge some of the ABM treaty constraints. This issue will require continual

review in overall U.S. national strategy, in terms of threats, costs, and effectiveness; impact on the security of the United States, our allies, and others; and other important factors.

SIGNIFICANCE OF POST-COLD WAR DETERRENCE CONCEPTS FOR THE U.S. NAVY AND MARINE CORPS

The U.S. Navy and Marine Corps will be among the military forces called upon to implement U.S. deterrence policy and strategy. Within their total capability, a number of their qualities, systems, and characteristics suit them especially to support deterrence strategy. For this purpose, special emphasis in the structure and support of the naval forces should be given to the following:

- **Sustain the SSBN force.** The strategic ballistic missile submarine (SSBN) force is a key element of the U.S. nuclear retaliatory force, becoming a relatively larger part of that force as the START treaties are implemented. It is therefore an essential part of our nuclear deterrent. The qualities that have made it especially valuable—its essential invulnerability, its stealth, its ability to change operational areas at will, its long time on station-—commend it as a continuing key element of future deterrence strategy. Sustaining this force implies commitment to continual modernization of its capabilities to meet future conditions.
- **Increase the ratio of offensive to defensive capability in naval forces.** The high level of command integration, the technical capability, and the global reach of the forces of the former Soviet Union dictated the balance among offensive and defensive capabilities of U.S. naval forces during the Cold War. That balance must now change in response to the new world conditions. In addition, some defensive capabilities have evolved to the extent that their use can contribute significantly to the offensive capability of the forces. Specific areas of naval force development that deserve special emphasis include the following

—*Precision attack.* The ability to locate and identify specific targets and place precisely timed weapons accurately on them with minimal U.S. casualties, minimal civilian casualties, and minimal collateral damage;

—*Theater missile defense.* The ability to maneuver fleet defenses that are effective against ballistic and cruise missile attack into areas where they can defend allies from such attack;

—*Undersea warfare.* The ability of the essentially invulnerable submarine force to make accurate conventional attacks against key targets on land, and to contribute to offensive mine warfare, together with the ability of the naval forces to sweep waters in areas of operation clear of threatening quiet submarines, and to prevent the laying of mine fields in such waters or to neutralize or destroy them if deployed; and

—*Effective blockade.* The ability to stop materiel and people from crossing a nation's borders, to enable imposition of effective sanctions.

- **Sustain the naval forces' forward presence.** The forward presence of naval forces enables friendly engagement of the "existential deterrent"-—existing powerful forces—in peacetime activities that can contribute to the fabric of deterrence; it enables force augmentation or maneuvers associated with deterrence, without infringing the sovereignty of any nation involved in a crisis at times when such maneuvers may be especially sensitive; and it enables rapid military response to crises where, if initial deterrence fails, there would still be a need to deter escalation. Thus, the forward presence of naval forces is an essential part of U.S. deterrence posture.
- **Incorporate deterrence in the overall naval forces' planning process.** This includes enhancing the aspects of naval intelligence germane to deterrence; incorporating deterrence into training at many levels, ranging from training and curricula in the war colleges to training in planning and operations especially relevant to deterrence; and budgeting to make certain that the deterrence aspects of the naval forces are adequately planned and supported. Naval force planning activities should also include participation in arms control initiatives to ensure that impacts of agreements affecting naval forces' deterrent capabilities are accounted for. All the parts of this process must be coordinated and interrelated to each other in a balanced, fully integrated program.

METRICS AND DECISION AIDS

It is impossible to denote the potential success or failure of a deterrence action or policy in precise terms because a large element of the outcome of any such activity must involve human judgments and reactions to specific situations, according to the specific value systems of unique individuals who may be involved. Nevertheless, it is possible to list a number of qualitative and quantitative factors by which the adequacy and appropriateness of deterrence actions and forces may be judged. They include:

- **Detection**. Determination that a hostile or threatening action in some part of the world is possible, potentially invited by circumstances, or actually in the making, in time to take anticipatory action.
- **Evaluation.** Understanding the nature of the threat to U.S. interests and those of our allies, the consequences for those interests, and implications for U.S. security if the threatened action is successful. This includes deciding each part of the continuum of deterrence capabilities, and how much we are willing to risk—in treasure, casualties, impact on our international position—by responding, or by not responding, especially with military force.
- **Coalition building.** Reviewing whether an alliance is in place that can serve as part of the deterrence activity, or whether one is required, how one could be built, and how it would be utilized.
- **Level of confidence in our understanding of the key participants.** The extent to which we understand what may be motivating the opponent, within the opponent's own value system, and the risks the opponent might be willing to take; and achieving similar understandings about the United States and our allies.
- **Appropriateness of the planned action and of the military response if one is planned.** Consideration of appropriateness must include review of all the actions planned, including the association between the non-military and the military parts of the response, including the forces that will be involved, how each component of the response is intended to contribute to deterrence in the specific situation, and evaluation of the chances of success by each.
- **Timing.** The extent to which the response can be appropriately timed to anticipate hostile moves on the opponent's part, to bring the requisite deterrent force to bear when it is needed at the place where it is needed, and to communicate intent and capability within the opponent's planning cycle.
- **Communication and credibility.** We must judge whether we have adequately communicated—by message, movement of forces, or other means, or several means together—our intended response in the event that an action we wish to deter is taken, and we must judge the credibility of the communication in light of both present and prior circumstances.

These metrics can form a checklist for planning and for response in specific situations.

In addition to accurate and reliable intelligence inputs, decision aids for deterrence include models, simulations, and games. Many are available; the chief enhancement needed is the ability to represent decision processes within the participants' value systems. The chief value of these additional decision aids is in enforcing disciplined thinking about a problem through ordering of the problem's elements, enabling evaluation of its critical parameters, and helping the decision maker avoid entrapment in his or her own frame of reference. They can also provide useful insights to help strengthen deterrence programs and activities.

Principles to follow in selecting and applying such decision aids include the following:

- Decision aids should incorporate the capacity for decision making and for representation of values and patterns of influence among all the participants; in particular, they should be able to represent the uncertainties in value systems and reasoning patterns, they should avoid stereotypes (such as "the Arab mind" or "the Chinese mind"), and they should be capable of building strategies that cover the most important possible variants in understanding an adversary's mindset;
- Decision aids should not be expected to foretell with confidence the outcomes of ongoing or contemplated deterrence actions, because the precise unfolding of events depends on many elements of chance and many unknowns;
- Decision aids should be used for training, learning, and practice;
- Decision aids should be used for analysis, to help identify gaps and uncertainties in our understanding of situations and of participants in events—applicable to hypothetical situations, as practice and learning devices, or to real situations; and
- Decision aids should explicitly portray for their users the levels of confidence in the information and representation of the values on which the decision aids are based. The value of deterrence decision aids available to U.S. decision makers can be enhanced by a number of steps. These include:
- Enhancing the ability to represent decision processes of U.S., adversary, and coalition participants, all within their own value systems and with attention to the specifics of the participants' leadership and their circumstances;

- Calibrating decision aids against real experience gained through past events;
- Making deterrence an explicit part of ongoing gaming exercises used for diverse planning and training purposes;
- Periodically undertaking political and military war games of deterrence per se;
- Learning how other countries use models and games in situations applicable to deterrence—the issues, opponents, and outcomes they consider;
- Keeping abreast of activities in the various institutes for conflict resolution supported by U.S. universities, foundations, and corporations, as a source of input for the Navy Department's models, simulations, and games relevant to deterrence; and
- Incorporating post-Cold War deterrence explicitly into Naval War College curricula, to obtain the benefit of the students' thinking and to train future leaders.

1

Deterrence: An Overview

GEN Andrew J. Goodpaster, USA (retired) and
C. Richard Nelson, The Atlantic Council
Seymour J. Deitchman, Institute for Defense Analyses (retired)

INTRODUCTION

How should we think about deterrence in the new strategic environment? With the demise of the "Soviet threat," we have begun to focus much of our attention on deterring aggression by countries using conventional means. And yet, nuclear weapons and nuclear deterrence still loom large, because of the weapons' vast and instantaneous destructive power. In addition, the slow but apparently inexorable spread of those and other weapons of mass destruction raises issues that cannot be ignored. The different weapons—nuclear, chemical, biological—and the actions that countries and sub-or transnational groups may take to obtain and possibly to use them, despite treaty constraints, must be separated and treated differently from each other because the time scales and physical attributes of the weapons' actions are different. [1] How to deter the use of any of them, when we[2] are unable, on moral and treaty grounds, to threaten to reply in kind in any but the nuclear area, and when even that response may be deemed morally insupportable in many situations, is a matter of deep concern. In addition, under the obligations taken by the nuclear weapons states, including the United States, under the nuclear Non-Proliferation Treaty (NPT) as extended for an indefinite period one year ago, the United States is obligated to decrease its nuclear arsenals and to decrease the leverage that nuclear weapons exert in the international arena. It is through this decrease in leverage that the

[1] Passive defense against chemical and biological weapons, in the form of protective clothing, antidotes, and vaccines, is easier than passive defense against nuclear weapons, although we have given far less attention to such protection against biological weapons than against chemical weapons. In an unprotected environment, chemical weapons may tend to have more localized—although still deadly—effects, and they are far less lethal per pound of agent delivered than are the other weapons. Biological weapons may take time to make their effects felt, and their source may be more difficult to identify if delivery is clandestine, but they may carry a greater risk of backfiring against the user. Biological weapons will remain highly dangerous to civilian populations unless passive protections can be much enhanced by intelligence, detection and evaluation methods and installations, and widespread availability of vaccines and antidotes for all known agents.

[2] Throughout, the editorial "we" is used to refer to the U.S. policy makers and decision makers who must devise and decide on deterrence actions in any particular case.

discriminatory aspects of the nuclear Non-Proliferation Treaty are to be erased over time. This ultimate result remains highly uncertain under current world conditions.

These developments associated with weapons of mass destruction, together with the issues involved in deterring the use of conventional force for purposes inimical to our interests, further complicate the already intricate environment into which we would extend the concept of deterrence that served so well during the Cold War period. At the same time, changing attitudes in the United States, deriving from the subsidence of the most extreme dangers to U.S. security and that of our long-term allies, have altered the way we can respond to threats against our interests and against other nations whose security is related to ours. The tools available to us to respond have also changed, with the advent of conventional weaponry of unprecedented precision and power. All of these factors require new answers to the question of how to think about deterrence in today's world.

It is not easy to disengage from thinking about matters affecting the potential for peace, war, and survival that evolved for half a century. The discussions and the collection of papers (see the appendixes) that form the foundation of this overview of the subject represent the best thinking about the problem that could be generated at this stage of development of the new world outlook. Some of the points of view presented will solidify in much the form presented; others are not yet ready to do so. Important differences remain within the special group of study participants and in the nation; they are highlighted in this chapter. They occur especially in areas having to do with:

- The potential uses and value of nuclear weapons in deterring attacks on close U.S. allies and vital U.S. interests by states using powerful conventional forces or chemical and biological weapons;
- Active defense against ballistic missiles attacking the United States; and
- Assessments of the extent to which less-than-vital U.S. interests might justify the use of military force, with attendant casualties, in the eyes of the American public.

To answer the lead question, this chapter first examines what deterrence means in the new environment. The group of study participants found that some principles endure; these are reviewed in the new context. The group next examined ways to extend these principles into the post-Cold War world situation. Finally, this chapter examines some approaches to analyzing deterrence policies that can shed light on how such policies may function in the new environment and that can help the United States and the U.S. naval forces prepare for action in future situations.

THE MEANING OF DETERRENCE

The concept of deterrence applied to international affairs is generally well understood. However, it can become extremely complex in application.

In its simplest form, to deter means to inhibit or prevent someone from doing something. Military force used in some form and to some degree underpins all types of deterrence. In the context of an overall policy, however, military force is likely to be only one tool among many diplomatic, economic, political, and military responses or anticipatory actions designed to guide development of an international interaction in directions that will prevent an outcome inimical to our interests. If deterrence of an undesirable action on the international scene fails, we may use military force for "compellence," and if we judge that the threat of force may trigger a preemptive attack we may use forms of "reassurance,"[3] beyond simple declarations to convince an adversary that an attack on our part is not planned. Each of these concepts, and the other-than military tools associated with prevention of hostile acts or those threatening our interests, has its own qualities and modes of operation. None is independent of any of the others in actual policy implementation. In all of them, the issue is to devise means to affect other nations' behavior, and to recognize that our own behavior will be affected by their responses. To avoid further complicating an already extremely complex set of concepts, **in this chapter the term "deterrence" is applied to the entire field of activities that may be involved in averting actions on the international scene that can harm U.S. interests and those of our close allies.** [4]

Deterrence represents an early stage in a broad protection of our interests, analogous to a military defense in depth. The protection starts with avoiding war by many means, and ends with fighting it in both defensive and offensive phases. During the Cold War, it was an attractive approach for the United States when it was not feasible to defend everywhere against all conceivable threats. For example, defending the small, surrounded Western garrison in Berlin was impractical, but an attack could be deterred by the threat of certain NATO responses elsewhere. Also during this period, deterrence became closely associated with nuclear weapons and their unique ability to threaten immediate and massive destruction. In the NATO context, the policy of deterrence was elaborated over the years to include a number of steps ("graduated response," "flexible response," "selective release") involving a sequence of graded

[3] The term "reassurance" was initially proposed by Sir Michael Howard to refer to the climate of reassurance that U.S. participation in European and global security arrangements during the Cold War conveyed to our allies (see Sir Michael Howard, "Lessons of the Cold War," Survival, Vol. 36, No. 4, Winter 1994-95, pp. 161-166). It has been extended by John D. Steinbruner of the Brookings Institution to "reassurance" that violence in settling their affairs is not planned among nations (see Appendix A of this report).

[4] Richard Garwin notes, "I believe that it is desirable to retain the concepts of 'reassurance,' 'compellence,' 'defense,' and 'deterrence'; then there ought to be a pure 'deterrence' as a subcategory itself."

responses with conventional and tactical nuclear forces before an all-out nuclear response would be invoked. This approach provided an opportunity to convey the will to respond to an attack in a manner suited to the provocation, without immediately escalating to a full nuclear exchange.

During this period, deterrence was commonly thought about in terms of convincing our major opponents that a particular action would elicit a response resulting in unacceptable damage that would outweigh any likely benefit. These concepts of deterrence were extended to other potential flashpoints, such as Korea. We sought to threaten "unacceptable damage" in an attempt to make the Vietnamese Communists desist from pursuing their war in South Vietnam. It was clear from the outcome that the United States generally underestimated the level of damage, and perhaps misunderstood the kind of damage, that the North Vietnamese would consider "unacceptable"—a result that has relevance to that concept today.

Rather than a simple cost/benefits calculation, deterrence is more usefully thought of in terms of a dynamic process with provisions for continuous feedback. The process initially involves determining *who* shall attempt to deter *whom* from doing *what,* and *by what means.* The *who* may involve building a robust multinational "coalition of the willing" with a wide range of capabilities and overwhelming resources with which to threaten an adversary. This combination of will and resources must be credible not only in terms of an ability to inflict unacceptable damage and/or to deny success, but also in terms of the willingness to pay the necessary costs and bear the pain that may be associated with executing threats. Positive inducements also should be considered as part of this range of capabilities. Of course these capabilities must be communicated in a clear and authoritative manner to the parties to be deterred, including demonstration of the capabilities where warranted by the occasion.

The target of deterrence—the *whom-—needs* to be explicitly defined so that the necessary analyses can be undertaken to understand the adversary's objectives, the importance he attaches to the action that is to be deterred, key vulnerabilities, propensity to take risks, bases of power, most valued assets, and other factors likely to influence key decisions. Not least in importance is the adversary's value system, in which the same set of facts and prospects may be viewed quite differently from the way the United States would view them. Within that value system, the prejudices, misperceptions, and calculations of a leader who may be an absolute ruler accountable to no one can loom large in commanding an understanding of the situation to be deterred as we view it. Creating this understanding is an essential underpinning for U.S. and allied deterrence policy and action, and yet it is sometimes neglected to the detriment of those policies.

The action to be prevented—the *what—also* needs to be clearly defined. In principle, we might want to prevent all acts that violate the principles of international law, especially when such acts are not consistent with U.S. interests. As a practical matter, however, we usually focus on those that may

have the most important consequences for the United States. And, in some cases, the more serious threats are not those with a high probability of taking place. For example, even during the Cold War, the probability of nuclear attack generally was quite low; however, the consequences of such an attack would be so severe that deterring such action demanded a high priority.

Finally, the *means* matter. An attack by conventional forces calls for one kind of response, and permits graded responses by various opposing forces. The possibility of attack by weapons designed to produce mass casualties might be an entirely different matter. As discussion below makes clear, it is not always apparent what the promised means of response should be, and deterrence of such attacks may be deemed to require means, such as theater missile defense, that entail both tangible and intangible costs that we have yet to face squarely.

Several important assumptions underlie most thinking about deterrence. Practitioners tend to assume, for example, that states are unitary actors, and logical according to our concepts of rationality. Deterrence also assumes that we can adequately understand the calculations of an opponent. One of the most important assumptions during the Cold War was that nuclear weapons were the most effective deterrent to war between the states of the East and the West. This assumption, carried into the post-Cold War era, however, may promote nuclear proliferation. Indeed, some authors suggest that the spread of nuclear weapons would deter more states from going to war against one another. The weapons would, it is argued, provide weaker states with more security against attacks by stronger neighbors. Of course, this view is also predicated on the assumption that every state actor's rationality will work against the use of such weapons, and that nuclear arms races will therefore not end in nuclear warfare.

In addition to threats of unacceptable damage, a strategy involving deterrence may also include more positive efforts to gain the desired behavior through an approach that extends the idea of "reassurance" to the post-Cold War conditions. The United States may undertake a variety of measures designed to induce rather than compel desired behavior, from various political and economic incentives to agreements on non-threatening force postures. Thus the notion of “deterrence" in its fullest sense may involve a complete range of tools to influence international behavior, including the use of diplomacy, trade, aid, military force, arms control agreements, and other means at the disposal of the deterring power. One way of enticing a potential adversary to forego aggressive behavior is to help the adversary develop a stake in cooperative arrangements among nations to achieve mutually agreed ends. As part of this participation, and to help bring it about, the adversary needs "reassurance," based on observation, that the opposing military posture is not immediately threatening-that it serves merely as an "existential" deterrent. Conversely, changes in such a posture can be made to reinforce deterrence if necessary, with due attention to avoidance of misperception on the part of the adversary. In thinking of deterrence as a process, it is useful to envision a succession of related, sometimes parallel steps, and to anticipate some options if deterrence fails. Such steps could include the following: *Detect* the onset or plans of

threatening moves; *dissuade* the potential aggressor from making such moves (perhaps through reassurance, carrots, and implied sticks); *deter* by putting the sticks in place; *defeat* the move if it is made; and *destroy* the capability to make such moves in the future. Such a series of steps, however, does not imply a rigid, linear process. Continuing, timely feedback is crucial in each stage; parallelism between deterrence actions promising military reactions and those using measures of reassurance can provide powerful inducements; and, if deterrence fails, appropriate responses should be adapted to the dynamics of the situation, and designed to deny success to the adversary, rather than automatically following plans made in the abstract.

THE NEW CONTEXT

The context for deterrence has changed dramatically since the end of the Cold War. Deterrence of actions inimical to U.S. interests must now take place in an unstable world in which the power of nations and of transnational groups is more diverse and spreading more widely. Devising relationships with many of these power centers remains a dynamic and changeable process. The problem of deterrence is thus more complex than it was, and the approaches to situations requiring deterrent actions must be even more measured and flexible. The likelihood that the United States may become involved in warfare using conventional forces, initiated by states other than the major powers, in matters involving less than national survival, has increased, while the relative roles of nuclear and conventional weapons have changed.

In connection with the nuclear threat we now must place more emphasis on issues of proliferation, while conventional forces are becoming increasingly important for deterrence in the strategic sense. The other weapons that produce mass casualties-—chemical and especially biological weapons—are coming to be of increasing concern, because they may be wielded by rogue states or terrorists who do not subscribe to the commonly accepted tenets of international law.

In the bipolar world, the West developed a generalized notion of deterrence that sought to prevent the Soviet Union from using force to further foreign policy goals, mainly by coupling nuclear and conventional forces so that any use of force between the superpowers raised the prospect of escalation and nuclear war. This approach to deterrence was not effective outside the main NATO-Warsaw pact confrontation in Europe, because it became clear that we would view it as neither appropriate nor necessary to go to the extreme of unleashing nuclear weapons against perceived Soviet proxies in limited conflicts like those in Korea and Vietnam. More specific invocations of the mere existence of deterrent forces were more successful. For example, in the Cuban missile crisis the U.S. blockade of Cuba risked escalation that could have culminated in the use of nuclear weapons. The willingness of the United States to take that risk, together with overwhelming U.S. conventional force superiority in the theater, persuaded the Soviet Union to draw back from its

deploy and sustain a nuclear force in Cuba.[5] In that case, U.S. security was directly involved, lending credence to any implied military threat, including potential use of nuclear weapons if it came to that.

In the current world situation, with one exception to be noted, U.S. security is not directly threatened, but our interests remain global. They have taken on an underlying economic character, which interacts with our desire to see democratic regimes spread and flourish based on the premise, articulated in the President's National Security Strategy, that "[t]he more that democracy and political and economic liberalization take hold in the world . . . the safer our nation is likely to be . . . . " In addition, as the developing countries of the world sort out their internal and external relationships in the post-Cold War environment, this sorting out process has generated ethnic conflict, large refugee migrations as people flee violence and war, and the potential for mass starvation and disease that the United States and its Western allies may feel obliged to alleviate on humanitarian grounds. Steps in this direction often involve military forces because they are well organized, they are disciplined, they can act quickly and with unique ability to focus resources, and the activities often need protection. After Somalia, Haiti, Rwanda, and Bosnia, the humanitarian mission for the U.S. military is becoming a more formally recognized element of the mission spectrum than was the case earlier.

The waning of direct threats to our national security and the rise of more general threats to international stability that are nevertheless inimical to our interests over the long term require thought about the nature of our strategic interests and about appropriate responses to such "less-than-vital" threats. Our strategic interests must now be seen as those involving the fundamental elements of our political cohesion, our economic well-being, and our ability to use our military power to defend them, wherever they are seriously challenged, rather than involving only an attack on our homeland. Deterrence in the face of such threats, which have reduced immediacy but nevertheless retain strategic importance, will probably require U.S. leadership to develop a sustained pattern of international responses to low levels of aggression that makes it clear that such behavior will not be tolerated by the international community.

Unless Russia, with its remaining large stock of nuclear warheads and intercontinental delivery systems, again turns hostile, we no longer face a serious military threat to our immediate survival. The prospect of war among the major powers is lower than at any time in centuries. Large-scale aggression is not a major temptation for the major powers; seizing territory by force is not worth the risk of major power conflict with the human and material expense that would be involved, although there may be a few marginal situations where the chance for a response is thought to be low, as in the Spratly Islands, or where the stakes are perceived by those involved to embrace issues of high political interest, as between China and Taiwan.

[5] See GEN Anatoly I. Gribkov and GEN William Y. Smith, USA, *Operation ANADYR: U.S. and Soviet Generals Recount the Cuban Missile Crisis,* edition q, inc., Chicago, 1994.

There is some evidence that Russia's substantial numbers of nuclear weapons, representing the only serious threat to U.S. survival for the foreseeable future, may take on increasing political significance for Moscow as one of the few residual military supports for its status as a major power, after the serious deterioration of other Russian military capabilities. A more immediate danger is posed by the possible loss to outside forces of Russian nuclear warheads, or nuclear materials and expertise that would enable others to make nuclear weapons in a relatively short time. And the illicit "nuclear weapons" need not be nuclear explosives; if the bomb that exploded in the New York World Trade Center had included large amounts of highly radioactive material, for example, thousands of deaths could have resulted over time. These possibilities present the most serious security problem facing the United States and, accordingly, must continue to receive priority attention. In this case, an effective deterrent strategy will need to include substantial reassurance efforts vis-à-vis the Russians, involving cooperative relationships in many areas, and helping to provide assurance with high levels of certainty that all Russian weapons and fissile material are secure and fully accounted for.

The implications of the fundamental change in context are most significant for the nuclear force postures of the United States and Russia. Their operational safety is now more important than operational readiness. During the Cold War these forces were designed and organized to generate massive strikes from widely dispersed locations on short notice. But large numbers are no longer necessary, and time is no longer critical. As a result, the capabilities that contributed to a high state of readiness during the Cold War could now pose risks of unauthorized launch. Moreover, we are likely to have ample warning should Russia again turn hostile toward the United States or NATO allies. In addition, the conventional military balance has shifted dramatically in favor of NATO. Therefore, the primary objective now is to achieve a stable and enduring posture of deterrence that is not threatening to either side.

Another hostile superpower with a large nuclear arsenal of size comparable to our own under the START agreement could emerge at some future time, an event that would also heighten our concern about the risks of a major nuclear standoff. Thus far, such an event appears unlikely, but in any case we should have ample warning of its development. Consequently, we have turned increasing attention to the risks attending proliferation of nuclear weapons and other weapons of mass destruction. The dangers of proliferation are exacerbated by the existence of a few rogue regimes seeking such weapons, who appear to want them to establish regional dominance and to spoil perceived influence by the United States and its allies, and who we fear may use them in what we view as reckless disregard of the costs and dangers involved. These developments pose a new kind of problem for the United States: how to deal with a small, intensely hostile nuclear power.

First, we must decide how we define our interests where they interact with the presence of such opponents. Actual or potential military conflict with a rogue regime at some future time could, if the rogue regime possesses nuclear

weapons, place our troops and our allies at high enough risk to deter us from acting as forthrightly as we might if only conventional forces were involved. In effect, the possession of nuclear weapons by a rogue regime would lead us to view the importance of certain interests differently from how we might view them otherwise. Nor are we certain whether we would or should use nuclear weapons in response to attacks involving biological or chemical weapons.[6] These problems contribute to continuing issues in defining the role of our nuclear deterrent if non-proliferation efforts fail. There is as yet no agreement among the experts on these issues (including those who participated in this study). They are examined again, from different perspectives, at several points below in this chapter.

A second problem, which the experience of the Gulf War has led us to associate closely with the so-called rogue regimes, is the role of active defense against delivery of weapons of mass destruction by long-range ballistic missiles. Through a series of arms control agreements, the United States and the Soviet Union limited their defenses against ballistic missiles, and as a mutually agreed result both remained vulnerable in the interest of deterring a nuclear war. But, given the change in threat, a debate has emerged (and has also been reflected in differences of view, to be highlighted in due course, among the participants in the current study) over the wisdom of developing a theater missile defense (TMD) system whose performance characteristics could impact our Antiballistic Missile (ABM) Treaty obligations.

Some argue that such a capability is necessary to defend against proliferators and that it would help to deter such strikes. The defenses are believed to be especially needed to protect our allies against hostile actions by rogue regimes. Others argue that TMD systems can be easily and inexpensively overcome by alternate delivery means for weapons especially aimed at civilian targets, and that development of antimissile defenses threatens to undermine the fundamental stability among the major nuclear powers that is reflected in the ABM treaty and, by extension, associated treaties like START II. These arguments extend to protection of the U.S. homeland from attack by regional powers who may have small numbers of nuclear weapons and intercontinental-range delivery means derived by extending the capabilities of medium-range ballistic missiles or space launch capabilities (and who may have the ability to deliver biological weapons by the same means).

This controversy accentuates several issues in crafting a new set of deterrence policies. They include important linkages between offensive and defensive systems; the key role of arms control in constraining both; the implications of technical boundaries between the theater and strategic-level

[6] Richard Garwin notes, "If the treaties against possession of chemical and biological weapons are universalized, then an international coalition could act even before the use of such weapons, and even against a nation that had not accepted the biological or chemical warfare treaty. (That is my meaning of the term 'universalized.')" With the use of nuclear weapons to respond to biological warfare, the additional problem is what to destroy. To destroy only the biological warfare production capability may not be a significant deterrent.

systems, and the viability of those boundaries as guarantors of adherence to the ABM treaty; and the important role of the rogue regimes in setting the stage for the arguments. Examples of the last include the Iraqi Scud missile attacks against Tel Aviv during the Gulf War, and the significance for Japan of the prospect of North Korean long-range missiles that could carry nuclear warheads.

The problems entailed in stopping or even slowing proliferation will tax our ability to craft consistent and effective deterrence policies. The diversity of the actors in proliferation, and the complexity of our relationships with them, mean that they must be treated case by case. The ambitious Iraqi nuclear weapons program that had made significant progress, and Iraqi development of chemical and biological weapons for delivery by theater ballistic missiles, highlight the difficulty of learning the details of, much less deterring, such developments. The approach of involving the "target" nation in cooperative relationships with other nations, together with providing reassurance that an attack on that nation is not planned, is being tried as part of our approach to prevent acquisition of nuclear weapons by North Korea, with as yet uncertain prospects of success. The argument with Russia over reactor sales to Iran shows how difficult it is to establish and maintain situation-specific flexibility—the Russians raise the question of why, if we are willing to give reactors to North Korea, we do not want them sold to Iran, subject to strict non-proliferation safeguards. Nuances of differences about the depth and reliability of inspection and control regimes to guard against potential diversion of weapons-grade materials become lost in the first-order political disagreements among the parties in the exchanges. All such interactions move our policy challenges far from the straightforward alignment of capabilities to counter opposing capabilities that characterized deterrence during the Cold War.

As noted in connection with deterrence of chemical and biological weapons use by rogue regimes, we must come to grips with still-unresolved questions about the appropriateness of invoking the prospect of a nuclear response to deter the use of those weapons, and if that is not appropriate, what such a deterrent should be. All such weapons are delivered in a political context. If the United States and our major allies are not directly threatened, the use of nuclear weapons against populations who are viewed as distinct from their "evil" leaders would likely be deemed inappropriate, no matter what weapons atrocities the leaders perpetrate. U.S. and allied holdings of chemical and biological weapons are prohibited by treaty obligations, precluding a response in kind; such a response would in any case be deemed inappropriate, for the same reasons. Thus, there is a growing body of opinion, still in contention, that nuclear weapons should be used by the United States and the industrialized nations solely to deter the use of nuclear weapons, while the use of other weapons of mass destruction should elicit conventional-weapons responses in addition to a wide array of active and passive countermeasures.

The coalition response to Iraq's invasion of Kuwait provides a model to deter such efforts in the future—a determined and decisive U.S.-led multinational force operating under U.N. authority. The Gulf War outcome

demonstrated that high-technology conventional weapons can strike devastating blows against the political, economic, and military power base of a country without the need to resort to the use of nuclear weapons. This demonstration has value in deterring major attacks with conventional forces, but as noted above that value might become less certain should another opponent, or Iraq in a future action, have nuclear weapons at the outset. Thus, one is led to the conclusion that both are necessary: powerful conventional weapons that we are willing to use in a strategic sense, and a nuclear deterrent that nobody would challenge by using nuclear weapons against us. In addition, U.S. nuclear forces must be sufficient to deter any combination of attackers who may have such weapons from using them against us or our closest allies.

The widely held perception, growing since the Gulf War, that the United States is unwilling to take casualties in conflicts that do not directly affect important U.S. interests also has important implications for deterrence in the new strategic environment. The rapid withdrawal of U.S. forces from Somalia after 18 soldiers were killed, and the ongoing uneasiness (before and even during their deployment) about casualties that might be suffered by U.S. ground forces in the former Yugoslavia, foster this perception.[7] Resolution of the issue of whether the United States has the will to use its powerful deterrent forces in any specific situation thus remains ambiguous, and detracts from our deterrent credibility.

Many also believe that we are at the dawn of a new era in the use of military forces. A military-technical revolution is said to be occurring that will fundamentally change the way forces are used. It is based in part on steadily advancing military technology, especially in the information-based areas of knowing the dispositions and activities of an opponent's forces and critical systems and facilities in detail, and being able to strike at them from long distances in a short time with great precision. Although it is not yet clear how we can integrate the new technology into new operational concepts and suitable organizations, some of the more important components are likely to include information warfare, precision strike, and decisive maneuver—i.e., maneuver that overwhelms an opponent before he can respond. The challenge is to apply these new capabilities and concepts credibly, in fact or in prospect, to specific problems that we seek to deter, while preventing an opponent from using them against us, or mitigating the effects of such use.

The trends and developments that have reduced the chances of war between the major powers also suggest that international security arrangements may increasingly emphasize more use of positive, cooperative relations in place of the threats of punishment that have dominated deterrence over the past 50 years.

[7] Some of the study participants who contributed to this report felt that the deleterious effects of U.S. reluctance to use force have been overstated. They believe that our prior actions, in the Gulf War, and during the Cold War before that, show that we will use our military when we deem the provocation to be sufficiently serious.

Thus we might expect to see measures involving inducement and reassurance play a much larger role in future strategies of deterrence.

ENDURING PRINCIPLES

The Dynamic Quality of National Interests

Defining national interests entails stating what is important to the nation and why. National interests are difficult to define outside a specific context, and thus it is difficult to prioritize them for purposes of allocating economic and military resources. We enunciate policies, argue them, and publish documents such as the President's National Security Strategy that tell the nation and the world what they are. But these statements have an abstract quality that is easily upset by world events. In some cases, such as the Korean Peninsula in 1950 and Kuwait in 1990, the context in which we evaluated our interests changed once we saw the facts of invasion and realized their full implications.

The implications of rapid geopolitical change for perceptions of national interest are not as commonly recognized as the presence of "stable" threats to obvious and enduring interests. We can tolerate, even encourage, change in national and international alignments without war, but violent change has its own threatening quality. Thus, in Korea, while a divided Korean peninsula that might evolve toward a different political condition was not of vital concern, the action taken to unify it by force under hostile Communist rule, especially when that action was viewed as a continuation of Communist expansion that had just "captured" China, could not be accepted. Forty years later, we faced a similar situation in the Middle East. While we felt we could watch without intervention while Kuwait and Iraq argued about the exploitation of oil fields that straddled their border, we could not tolerate the threat to the Western world's oil supply posed by an Iraq that moved militarily to sit astride some of the main sources of supply and to threaten major additional sources in Saudi Arabia. Elsewhere, it was argued by some, before our entry into Bosnia, that the war there was of no direct concern to the United States. But others noted that the war could expand and involve Greece, Turkey, and Russia, and threaten the unity of NATO. Had that happened, the same area would clearly have come to be of vital concern to the United States as well as to the others involved, and it was that risk that induced the United States to lead a strong effort, including military action, to terminate the ongoing war there. It was also argued that the need, on purely humanitarian grounds, to prevent mass murder of genocidal proportions offered sufficient reason for intervention.

Thus, perceptions of national interest appear to depend very much on the geopolitical context revealed by the dynamics of rapidly moving events. Deterrence policy cannot be formulated on the premise of a static world in which today's view and policy endure indefinitely. Change and conflict have always characterized the world. When the prospect of adverse change, potentially involving severe conflict, posed a direct threat to our survival during the Cold War, we acted to prevent the most threatening kind of violent change.

More rapid change, and instability, with counteraction much farther from influence by our direct intervention, will characterize the world of the future. Threats to our immediate survival will be fewer, at least for a time, but threats to our ultimate well-being as a nation will ebb and flow. Our deterrence policy will have to be formulated with these dynamics in view.

Credibility

Deterrence can succeed only if the combination of threats and incentives is credible, and this requires both capabilities and political will. The United States, for example, can call on a wide range of political, economic, and military capabilities that would be overwhelming in most cases. However, several adversaries have not been deterred because they judged that the United States lacked the political will to incur casualties, sustain costs, take risks, and deepen its involvement when vital interests were not at stake. Also, many potential adversaries probably doubt that the United States will use nuclear weapons short of responding to a major nuclear attack on the United States or U.S. forces.

To persuade an opponent not to take proscribed actions, the capabilities and prospective outcomes invoked as a deterrent must convince the opponent that the costs, in terms of opportunities and value lost, judged by his own means of measuring them, will not be worth paying, and that in any case the deterring capabilities will prevent him from achieving his objectives. Furthermore, the opponent must be convinced that punishment will be forthcoming, and he must fear the punishment. Likewise, he must perceive that inducements offered will in fact be delivered. While the entire world understands the divisions between executive and legislature in the United States and various other parliamentary governments, doubt about whether the legislature will permit the executive to deliver on promised benefits can have as deleterious an effect on positive measures to induce desired behaviors as failure to punish can have on deterring undesirable behaviors. It is in areas such as these that uncertainties arising from vastly different political systems—U.S. and the potential opponents'-—can contribute to the failure of deterrence.

Communications

Deterrence requires effective communications correctly perceived, so that the potential adversary knows that by undertaking the prohibited action he will incur substantial loss, or that by not undertaking it he can make a substantial gain. This can pose a dilemma for the deterring party in terms of the degree of specificity or ambiguity that should be communicated with regard to responses. In some cases, we may want a potential adversary to be uncertain about whether the United States will respond and in what manner. In other cases—usually involving more important interests—we want potential adversaries to know very clearly that we will respond with overwhelming force. In the latter cases, the message can be communicated through exercises demonstrating the capability to

respond, as well as by direct and unambiguous communication. Indeed, coupling the two may make for the most powerful deterrent.

Similarly, the extent to which we should be transparent or secretive will vary with the specific situation. As a general rule, we may want to be more secretive when our capability or will may be inadequate, and we should be more transparent when we are more confident in our ability to act decisively.

When to communicate is also an important aspect of the message to be conveyed. It is difficult to know from historical situations what effect the timing of communications may have had on some action. Strategic games, such events as movements of British forces to Kuwait in 1961, and apparently the prelude to the Gulf War and the October 1994 U.S. deployment to the Gulf to counter threatening Iraqi troop movements, all suggest that movement of forces when a crisis appears imminent, perhaps together with verbal communications, has a more powerful effect than forces that remain in their precrisis posture, however powerful the latter may be. In the Cold War, heightening of alert status of forces had a similar effect. This observation simply conveys that communication need not be only verbal; the key is to make the message understandable, and to time it properly, and to make certain that it has been received and understood.

Perceptions

Our perceptions of what it takes to achieve effective deterrence may be different from the perceptions of those we are trying to deter. This possibility places a priority on understanding the other party, particularly in terms of vulnerabilities and needs. We also need to judge the propensity of opposition leaders to take risks. In any event, our calculations must explicitly identify assumptions and our level of confidence in the underlying estimates and assessments of alternatives for both sides. Calculating what constitutes unacceptable losses for a particular opponent is quite difficult. North Vietnam, for example, demonstrated an exceptional willingness and ability to sustain heavy losses; although deterrence was not an explicit part of U.S. strategy in Vietnam, dissuading the North Vietnamese from continuing the war by punishing them and thereby inhibiting their ability to pursue the war *was* a part of that strategy, even though it was largely unsuccessful.

Cultural and perceptual blind spots also present a danger in developing a strategy involving deterrence. Unfortunately they usually become apparent only after a disaster. Additionally, they may be peculiar to leaders, attendant on their political positions and the attention they must give to various internal constituencies. We must overcome cultural biases that color the views of our society, including our leaders, about others. As a minimum, we should assume that the rest of the world, including allies and potential adversaries, do not think as we do. They may be more willing to sacrifice human life to achieve certain goals; they may be willing to suffer more damage than we would in a similar situation; they may hold dear things that we would not, and vice versa.

Bridging such fundamental gaps requires concerted efforts to understand the perspectives of all the parties with stakes in a situation. One key question to ask is how *they* define the problem. Typically, it will be quite different from our own perceptions. Another key question is to ascertain what risks they perceive as being involved, and their willingness to undertake those risks. We must also be certain that we understand their own views of their strategic interests, the solidity of their power base, and other matters related to peace-or-war decisions.

Applicability

Not all actions can be deterred. Some adversaries are willing to pay any price to achieve a vital national goal in an area that is of less than vital interest to the United States, so that threats of substantial damage or destruction are meaningless. Most terrorists fall into this category; indeed, we may not know the identity of the perpetrators until after the event, if then. Thus, this circumstance lacks the "deter whom" component. The possibility of failure, however, does not mean that we should not pursue a policy of deterrence. Some behavior, like crime, may not be totally preventable, but we nevertheless do and must continue to take steps to deter it. And, since history does not reveal its alternatives, we would have little idea how much worse the behavior might be without the deterrent actions.

In determining applicability, we should consider the extent to which the United States can influence a particular situation; the timing, including the domestic political calendar in the United States; and the most important factor, the resources we are willing to commit. If the deterrent effort will require a substantial commitment of resources over a sustained period-—especially the lives of soldiers—then the stakes must be very high. In a related area, civilian casualties inflicted on an opponent also raise humanitarian concerns that affect the severity of punitive actions we will be willing to take, given the stakes. Anticipating the dynamic quality of our national interests, and acting against potential outcomes that are not immediately threatening but that may become so, must be part of the formulation.

Intelligence

There is a need for much enhanced intelligence and better means of interpreting intelligence data. The earlier a potential problem can be identified, the wider the range of options for action and the more likely that the problem may be deterred or deflected. Policy makers cannot avoid paying more attention to specific current events than to the distant future. Thus, there is a need, in association with an enhanced intelligence capability, for a recognized, high-level body of "strategic worriers," experts having a diversity of views and approaches, who can look at the more distant future and identify issues that need to be addressed as far upstream as possible. Once such problems are identified, timely and accurate intelligence, interpreted in light of the strategic issues related to U.S. interests, is required to support strategies of deterrence. Such

information will have to be developed on a worldwide basis and address the full range of capabilities, vulnerabilities, intentions, and likely perceptions of potential problem states in each region. Furthermore, intelligence must identify the most effective means of communicating with key individuals and states, both formally and informally.

DERIVATIVE POLICIES AND KEY ISSUES

Policies Involving Nuclear Weapons

Many of the deterrence issues that must be dealt with in the new context will involve changes in our policies involving nuclear weapons. Given the central role that nuclear weapons played in U.S. deterrence strategy during the Cold War, it is impossible to arrive at a new set of policies involving those weapons without extensive discussion, involving wide-ranging argument and sometimes strong differences of view. Many of the issues in which nuclear weapons play a role have yet to be articulated in all their complexity; many of them will appear to have one apparent solution in the abstract, only to have specific situations pose different choices from those that had been anticipated. In such cases, resolution of the issues will be in doubt until the nation is faced with the need for urgent decisions that pose the issues in concrete, situation-specific terms. The issues are presented in the following paragraphs without indication of firm solutions. For reasons similar to those expressed for the nation in general, differences in view within the special group of study participants reflected differences within the broader community concerned with matters of national security.

Coupling of Nuclear Weapons with Other Forces

The discussion about whether to separate or integrate nuclear and conventional forces to deter war takes on a different significance and orientation under current circumstances. During the Cold War, the issue was resolved in favor of integration in both Europe and the Pacific, mainly on the grounds that such integration helped offset the unfavorable conventional balance. The most recent Nuclear Posture Review[8] reportedly did not address basic missions for the nuclear forces. Given the new strategic environment, there is more reason to decouple nuclear forces from conventionally armed warfighting forces, and to limit the nuclear forces to deterring the use of nuclear weapons by others. This approach would be consistent with priority efforts to engage Russia in an overarching network of cooperative relationships as part of the new security framework for Europe. Establishing such a network of relationships involves clearly shifting U.S. and NATO relations with Russia from confrontation to cooperation, in a manner similar to what was done when the allies changed their

[8] Secretary of Defense, Annual Report to the President and Congress, February 1995, pp. 8392.

relationships with Germany and Japan after World War II. The complications added by unfolding events in the former Yugoslavia, and the Russian reaction to proposals to admit Eastern European countries into NATO, show how difficult this approach will be. Such relationships must be built on a community of interests and understandings, which have yet to be fully established between the two powers.

Finally, it may be argued that decoupling nuclear weapons and limiting their use to deterring the use of others' nuclear weapons, and possibly others' use of chemical and biological weapons, may support non-proliferation efforts. Actions and policies to this effect may devalue their importance to potential proliferators and help reassure Russia that the United States does not intend to coerce Moscow and exploit Russian vulnerabilities.

Counterarguments to reserving nuclear weapons solely to deter the use of nuclear weapons hold that small nuclear weapons may have unique applicability in situations where it is important to take advantage of properties such as deep earth penetration, strong electromagnetic pulses, or enhanced radiation for rapid and widespread weapon effects that cannot be easily achieved by other means. In addition, as is indicated in the discussion titled "Extended Deterrence," below, situations might be foreseen in which it is important to retain a nuclear option to respond to an overwhelming conventional-force attack against a close ally who does not have nuclear weapons, unilaterally or as part of a coalition.

A further set of arguments must be reviewed in the context of a potential nuclear response to the use of chemical or biological weapons. As is indicated below in the discussion of targeting policy, our willingness to use nuclear weapons in situations where national survival is not at stake is problematic. Chemical weapons effects, deadly though they may be locally, would not be widespread enough to call forth a devastating nuclear response. Response to the use of biological weapons, if used against our own or allies' civilian populations, could face the difficulty of identifying the source, as well as the considerable time delay that might occur between the distribution of agents and the appearance of mass casualties. A nuclear response at that stage could be viewed as a response coldly calculated to create extensive casualties rather than a response in the heat and locale of battle, thus challenging our moral precepts. The situation could look very different in the event of an actual or potential biological attack leading to thousands or millions of civilian casualties by an identified opponent, against the U.S. homeland or a related vital interest, such as a similar attack on the NATO region. In that case, especially if nuclear weapons were the most ready response that could assure immediate devastation of the source of the attack, a U.S. president could be impelled by circumstances to make a nuclear response to attack. Use of chemical weapons would be more problematic, as their radius of action would be more localized, but the response could also be driven by the specifics of the events. This appears to be another situation in which the potential response would be conditioned on immediate circumstances at some future time. There is as yet no resolution of these issues in view; they have barely been discussed in public forums.

Even if nuclear weapons are for all practical purposes decoupled from battlefield forces and other weapons of mass destruction, and explicitly limited to nuclear deterrent roles, the implied potential for their use—their very existence—still may make them effective deterrents in contexts other than the use of nuclear weapons by an opponent. For example, recent evidence from Iraq suggests that Saddam Hussein was deterred from using chemical and biological weapons that were prepared and delivered to missile sites and airfields because he believed that the United States would respond with nuclear weapons. According to the admittedly sketchy available data, such perceptions were said to be based mainly on Secretary Baker's threat of massive destruction of Iraqi industry if such weapons were used, with the implied threat of nuclear response. This is an illustration of the complexity of the issue in attempting to focus nuclear weapons on a tightly limited deterrence objective. Other complexities become apparent in this chapter's continuing discussion.

Targeting Policy

The new strategic environment suggests a need to review targeting policy for nuclear weapons. If the primary objective is to deter the use of nuclear, and possibly chemical or biological, weapons by others, then appropriate targets should include installations that are highly valued by potential opponents, including those that affect their ability to deploy and employ the weapons. Especially difficult would be the selection of appropriate targets for nuclear weapons that respond to the use of chemical or biological weapons against our forces in the field. Humanitarian concerns about opponents' civilian casualties will also figure in selection of targets, since if the weapons of mass destruction are used by a "rogue regime" that is seen as not representing the will of its people, there will be U.S. public resistance to inflicting severe punishment on civilians who might be viewed as the regime's additional innocent victims. Such regimes—or, at least, their leaders—recognize these concerns on our part and often embed their military activities in their own civilian populations and infrastructures, making our decisions in this area especially difficult. Our response, again, could depend on specific circumstances and the level of casualties (and therefore public revulsion and anger) the attack might create. Part of our deterrence action must be to signal these factors and their possible consequences to the regime if the strategem does not work in their favor.

No First Use

There is disagreement about whether the United States should establish and, further, whether it should then announce a "no first use" policy. During the Cold War, the United States was under pressure from the Soviet Union and China to adopt a policy of "no first use" of nuclear weapons. Subsequently, however, Russia abandoned this public policy position, although China and other states still call for such official statements on the part of all nuclear powers. Many argue that a no-first-use policy is not credible, nor is it binding.

For example, nuclear weapons may be used in "defense-of-last-resort" circumstances by weaker countries under mortal attack by powerful neighbors. While the United States does not now anticipate such circumstances, this cannot be said to be true for all our allies in all circumstances.

The United States has offered some assurances to the effect that such weapons will not be used against non-nuclear weapons states that are Non-Proliferation Treaty (NPT) signatories other than in circumstances such as alliance with another nuclear power. Similarly, we have pledged to take positive steps, including calling in the U.N. Security Council with its nuclear member states, in response to any threat or use of nuclear weapons against a non-nuclear state. Thus, in our own strategy, given our preponderance of conventional strength, we convey the message that we do not currently visualize using nuclear weapons in response to a conventional attack on our interests. How the policy would play out, in terms of warning and response, against a conventional attack by a country that had nuclear weapons and might evince willingness to use them against a massive U.S. and allied conventional response, is a question in need of further consideration. As in other areas involving the use of nuclear weapons, decisions on these matters will likely be resolved in ways particular to specific situations. It would certainly be useful, however, to give some a priori thought to them, considering the circumstances.

Any reexamination of this issue should focus initially on exploring any post-Cold War changes in the policies of all five declared nuclear weapons states (United States, United Kingdom, France, Russia, and China), which are also the five permanent members of the U.N. Security Council. The examination must then be extended to explore the circumstances of our allies, and the allies of Russia and China, in different areas of the world, and how a policy of no first use on the part of the United States would affect all of our strategic positions vis-à-vis regional neighbors.

Weapons of Mass Destruction and Precision-Guided Munitions

At the core of the concept of deterrence is the known ability to inflict damage that the opponent will view as unacceptable. Therefore nuclear weapons have come to be closely associated with deterrence because of their well-known ability to cause mass destruction and casualties. Other means of producing mass casualties, such as chemical and biological weapons, are, for reasons of principle and treaty obligations, not available for the United States in a deterrent role, even for response in kind. As suggested above, we could be self-deterred from using nuclear weapons in any circumstances where they are not used first, by the prospect of unintended civilian casualties and destruction. Traditional conventional weapons, including incendiaries that were used extensively in World War II, can cause just as much damage to a nation's vital facilities, given enough time and delivery resources. Extensive damage to resident populations is also a byproduct of such attacks; as has been noted at several points above, inflicting such damage in matters involving less than

national survival is likely to be viewed as unacceptable to the U.S. public, and likely our close allies' societies.

The capabilities of conventional weapons have evolved dramatically, however, offering what many see as an exit from the mass-casualty dilemma. Highly accurate and lethal advanced conventional weapons with precision guidance can destroy specific targets with much less collateral damage, and they can be delivered at long ranges with relatively low risk of friendly casualties. To be effective, however, they require accurate and timely intelligence and full situational awareness about the status of targets and defenses. These new capabilities and attending support requirements are currently driving the evolutionary development of the U.S. armed forces. For the United States in its current world situation and posture, these weapons may be more credible than nuclear weapons in deterring any kind of aggression below the level of a nuclear strike. However, their action, while more precise and selective, is also much slower in a relative sense—it takes days or weeks for their full effects to become apparent, as we saw in the Gulf War and Bosnia, compared with the time to deliver a single or a few nuclear weapons—and affords more ability to respond. A party that thinks it can respond successfully will be less likely to be deterred by the potential use of conventional weapons. Also, if nuclear proliferation creeps ahead, the relative postures of the United States and nations whose actions we wish to deter will change. At low levels of threat, conventional weapons may be a more effective deterrent than are nuclear weapons, but the contributions of conventional weapons in deterring a nuclear threat are another matter. Thus, the relative value of the two kinds of weapons for deterrence remains to be seen, probably through many trials, as in the Gulf and Bosnia examples. Again, the choice of weaponry for deterrence and response will probably depend at least as much on the specifics of situations and the intensity of threats to our interests as on the inherent capability of the weapons. In the long run, therefore, the nuclear and advanced conventional capabilities are complementary rather than interchangeable, and both sets of capabilities must be retained within our force posture.

Extended Deterrence

"Extended deterrence" refers to the umbrella we extend over our allies to protect their homelands, as well as our own, from attack. In the Cold War, extended deterrence referred mainly to nuclear attack, although as this chapter's authors note, nuclear attack and conventional attack in NATO Europe were, by design, not decoupled from each other in deterrence policy. Although the threat of attack on our closest allies is low, the U.S. nuclear umbrella remains important. And because the threat is low, the relationships that form this important framework could atrophy unless they receive regular attention.

Extended deterrence also serves to obviate the need for the allies to develop nuclear weapons capabilities of their own. Germany and Japan, for example, could easily (in a technical sense) develop nuclear weapons but instead rely on a

close security relationship with the United States. However, the spread of nuclear weapons and other weapons of mass destruction to smaller states, and neighboring rogue states, coupled with perceptions about U.S. willingness to respond in local conflicts not involving deep U.S. interests in the static situation, could change those states' perceptions of need for their own weapons. In addition, power relationships in the world will change over time, and a currently unforeseen, credible threat of an overwhelming conventional attack against a close ally could arise in the future. Such a development could resurrect the Cold War era arguments in favor of using nuclear weapons *in extremis* to respond to massive conventional attacks. Thus, although the drift of events and world power structures appears to favor reserving nuclear weapons to be used only to deter the use of nuclear weapons, including their use in extended deterrence, their potential use as a deterrent against conventional attacks in some future circumstances cannot be totally ruled out as we maintain our extended deterrence posture. This is a matter of some controversy. It may be a case in which, by necessity or by design, ambiguity should be preserved until the need for a decision in a specific situation appears.

Applying Deterrence Policy

Existential Deterrence

"Existential deterrence" simply means the existence of powerful forces that a potential challenger knows can be brought into action if the need arises. There is always hope that when the United States expresses a desire to influence the outcome of a situation in which the use of military force may be involved, the sheer power we bring to the table by virtue of the existence of the strongest military forces in the world will weigh heavily in leading to a resolution of the issues. However, in the new environment as in the old one, the fact of the existence of those forces, alone, will not be sufficient to prevent many conflicts or actions against U.S. interests. This is largely the result of perceptions about the willingness of the United States to actually commit its formidable military power in specific situations. Therefore, if a threat is perceived, it will probably require more direct efforts on the part of the United States to communicate our will and intention to act than has been the case in the past. The lessons of history about the dynamic quality of our interests, and the impact of force movement and visibility on adversaries' perceptions at critical times, will be especially important.

In connection with existential deterrence, however, nuclear weapons play a special role. They provide existential deterrence whether they are actually deployed or not. Nuclear weapons have been given credit by some for having produced the longest absence of all-out world war in recent history. This role of nuclear weapons might even continue in the form of "virtual extended deterrence," since most industrial nations could regenerate nuclear weapons in a period as short as 1 or 2 years if an extended worldwide conflict were to occur

again. Moreover, certain U.S. deterrent actions might be conditioned by knowledge of nuclear holdings by a prospective antagonist.

Self-Deterrence

The United States can be self-deterred from acting by establishing overly strict criteria for the use of military force. The criteria put forth by former Secretary of Defense Caspar Weinberger, for example, which established conditions of mission specificity and the predictability of success, and specified conditions for withdrawal of forces before an expeditionary mission could be undertaken, could preclude U.S. intervention in a wide variety of conflicts that we would nevertheless like to deter. Similarly, we have implicitly established very high thresholds for the use of nuclear weapons so that their use is credible only when the most vital interests—perhaps limited to prior use of nuclear weapons against the United States, NATO allies, and Japan—are at stake.

Escalation

A major problem for deterrence is dealing with incremental, threatening steps taken such that each one may not warrant a major response, but which cumulatively will result in a situation we want to deter. Taking a massive punitive action in anticipation of a possible but not certain outcome toward which only a first small step may have been taken, will raise public concerns and objections that can have undesirable domestic and international political consequences. A related problem involves a kind of counterdeterrence when an opponent raises the stakes to a level we find unacceptable. An example of these problems is our effort to deter North Korea from building nuclear weapons and North Korea's counter to the threat of sanctions, claiming that they would be an act of war—something we clearly want to avoid. How to come to grips with such situations is a major factor in developing a post-Cold War deterrence strategy. Perceptions of will and willingness to take risks and suffer the consequences of failed deterrence will be determining factors in any such situations. Parallel actions of reassurance must clearly be part of the arsenal of tools at our disposal when military force alone will not resolve undesirable situations.

Declaratory Policies

This discussion notes at several points (e.g., in the above section titled "Communications") the dilemma between enunciating clear deterrence policies and maintaining ambiguity in situations where such announcements may either exacerbate a situation or provide an opening for exploitation or miscalculation by a would-be aggressor. Yet clear policy declarations are often necessary for domestic political purposes and to reassure our allies, even as they may be viewed as stimulating undesirable reactions from prospective opponents. The circumstances in which declaratory policies are advisable will vary; often they

are not predictable, as we found in the cases of Korea and Kuwait. An intermediate position would eschew explicit declarations of policy in areas where the dynamics of a situation could change the policy rapidly, but would maintain a transparent diplomatic and military posture that could rapidly be translated into action, and thereby designed to give a potential aggressor pause in a situation of ambiguity. Given the many remaining uncertainties attending the formulation of policies regarding the potential use of nuclear weapons, that area may be one where it is most advisable to assume such a position. At the same time, for the sake of our own security and that of our allies, there must be no doubt about the fundamentals of where our interests and potential for action lie in areas of our own and our allies' vital interests.

Alliance Implications of Exercising Deterrence Policy

Unilateral and Multilateral Deterrence

Unilateral deterrent capabilities are attractive because they provide more freedom to act, they have simpler requirements than multilateral actions do and thus can be undertaken more quickly, and they are likely to be more secure, with preparations that can be undertaken in secret. However, "mutual deterrence" of one party by another has lost much of its meaning with the end of the Cold War. The objects of deterrence—the "deterrees"—are less easily foreseen. Moreover, the United States has been increasingly less willing to use its military forces with inherent risks of large casualties without acting in cooperation with others. Therefore U.S. unilateral deterrence is becoming progressively less credible, and a trend toward multilateral deterrence is becoming more likely, although U.S. leadership is still sought.

Multilateral deterrence offers compensating advantages. Most importantly, a widely shared effort may be perceived as overwhelming. Also, with a shared burden, the cost of deterrence is lower for each party. Furthermore, a multilateral effort is more legitimate in international perceptions than are unilateral efforts, particularly when it includes states from different regions and cultures. A broadly based coalition also may be less vulnerable to attacks by the party to be deterred, and it would allow a wider variety of potential responses. Unilateral deterrence and multilateral deterrence are not always mutually exclusive; unilateral actions can be used to stimulate or to complement multilateral actions.

A difficulty with multilateral deterrence, illustrated in Bosnia, is that it would be more constraining. Achieving agreement within the deterring coalition as to when and how to react to provocation could be more difficult, thus potentially presenting many opportunities for the aggressor to play on individual coalition members' special interests, and so to divide the coalition or force it into inaction. In this respect, regional coalitions of nations that have a commonality of interest in a specific situation, such as NATO during the Cold War, will prove more powerful than generalized coalitions such as the United Nations.

Alliances and Coalitions

Almost every situation in which we will want to deter some action inimical to our interests and those of our closest allies will involve an international coalition, often assembled ad hoc. Preparatory steps to ready such coalitions for expeditious action will make it easier to activate them in crises, and will make the potential of the coalitions more compelling to would-be aggressors. Such steps may include discussions with governments that may be involved, review of forces that may be assembled under U.N. or NATO aegis or some other international agreement, and military visits, combined practice, and development of common command language and military force interoperability in peacetime.

To take such steps, we must anticipate where crises may arise. Although premature publicity about such anticipation can have adverse political impact both nationally and internationally, taking the preparatory steps during normal interactions between governments and forward-deployed U.S. forces, with appropriate timing linked to ongoing events, should mitigate the risk of adverse political impact and could in some circumstances add to deterrence. The particular circumstances of potential coalition members, their relationships with more powerful neighbors, the opportunities to benefit from U.S. extended deterrence and to influence U.S. regional policies and actions, and eased circumstances for U.S. presence in a region may all be inducements to enter coalitions despite perceived political risks in doing so.

Defense Against Ballistic Missile Attack

There is disagreement, nationally and reflected in some of the appended papers, about the value of strategic defense of the United States, whether such defense should be deployed, and the role of theater missile defense in the broader picture.

The Strategic Significance of Ballistic Missile Attacks

The capacity to launch ballistic missiles is spreading to over 40 nations, large and small, in different parts of the world, and some number of these nations will use such missiles for military and political purposes. The range of missiles that can be used even by small nations is growing from a few hundreds of kilometers to over 1,000; nations that will have significant space launch capabilities will be able to convert those capabilities to attack targets at distances from 3,000 kilometers to intercontinental range. Such missiles are viewed as an especially grave threat not only because of their capacity to attack tactical forces from long range, but also because of their ability to strike at vital centers of logistics, industry, and population with warheads of mass destruction. While the missiles would be vulnerable to destruction if not held in silos or caves, circumstances could be imagined in which they can be used in a first strike. Although the ballistic missiles used by Iraq in the Gulf War had only

conventional-explosive warheads and were highly inaccurate by modern standards, they could hit cities in Israel and Saudi Arabia. Thus, they carried important political implications, and their use diverted significant effort from the main military tasks of the coalition opposing Iraq in the war. In this sense of being able to strike at an enemy's heartland, and of being able to affect political alignments and war plans in a military conflict, the weapons must be considered to have "strategic" as well as tactical value, whether they are used against the United States, or our forces and bases overseas, or our allies.

Defense in Depth Against Ballistic Missiles

Active defense against ballistic missiles must be considered, in the strategic sense, as only the last stage of a defense in depth that begins with peacetime policies including deterrence of aggression in the first place. More specifically focused deterrence attempts to inhibit the spread of effective ballistic missile capability, through treaties and treaty-like arrangements such as the Missile Technology Control Regime to which many nations, including the United States, the nations of NATO Europe, Russia, and China, subscribe. Deterrence of military conflict of any kind is the next stage, and deterrence of the use of missiles in such conflict, and especially of missiles with warheads of mass destruction, follows. The defense against the missiles themselves is part of a broad defensive array that encompasses a spectrum of activities and systems. Included in that array, in addition to antiballistic missile defense, are attacks against missile launch sites, antiaircraft defense against attack by manned aircraft and cruise missiles, and widely distributed defensive measures against deployment and delivery of weapons of mass destruction by military units or by clandestine means such as disguised civilian ships and aircraft entering commercial ports and civilian airfields. A variety of passive defense measures at potential target sites is also included. Active defense against ballistic missile attack, including attacks against both the U.S. homeland and allies' homelands and deployed coalition forces helping to defend those homelands, must be viewed in this broader context. All experience in warfare tells us that none of the stages of this defense in depth can be expected to work perfectly. But each stage has an important contribution to make toward a strong cumulative defense. The potential for success of each stage of defense and the cost imposed by each on potential opponents will determine how resources should be distributed across the multistage defense.

Active Defense Against Ballistic Missile Attack

Active defense against ballistic missile attack has taken on an aura and importance beyond those of most weapons systems because during the Cold War the prospect of such defense affected relations between the United States and the Soviet Union and the size and nature of the offensive missile holdings of each of the countries. Deploying antimissile defenses threatens U.S.-Russian treaty obligations that have lent stability to the offensive strategic deterrence

equation. Many argue the need, now, for protection of the United States against small attacks by states other than Russia, and protection of allies against analogous attacks.[9]

The problem of intercepting a missile with high probability, in the terminal phase of its flight, is well on the way to solution, although full development and implementation of the capability have yet to be achieved. Other aspects of defense against ballistic missile attack are more difficult to solve, however; if the warhead is nuclear, it must be intercepted before the warhead can continue on a ballistic trajectory to the target vicinity and detonate with wide effect, and before detonation on contact with the interceptor can cause damaging effects from a greater distance. Intercept must occur during an even earlier stage of a missile's trajectory to ensure that it does not disperse submunitions carrying chemical or biological agents-the militarily more effective means of attacking with those weapons-thereby rendering terminal defenses only partly useful. Intercept early in the trajectory also avoids the difficult problem of differentiating decoys from true warheads, a problem that otherwise presses toward terminal defense after both warheads and decoys have reentered the atmosphere. These technical pressures lead to concepts for boost-or ascentphase intercept, and to "preboost" system concepts to find launchers and missile command, control, and targeting complexes and destroy them before missiles can be launched.

The growing number of potential attackers who may threaten our allies and affect our interests, or who may ultimately threaten our homeland, suggests a major expenditure on proliferation of antimissile defenses. Such defenses must also be deployable on short notice to protect allies in a crisis, if they are not already in place. Combined with the technical needs for boost-phase intercept and prelaunch attacks, and separating consideration of defending the United States for the moment, a desirable "theater-strategic" goal emerges that would place a "cap" over a hostile or rogue nation that might threaten to launch ballistic missiles against U.S. bases or allies' vital facilities and their populations, to keep such missiles from emerging beyond that nation's borders. It has been suggested that the United States might join with Russia to create such a capability. However, if the Russians had it, they might not agree with us about what a "rogue nation" is, and they would be able to threaten our allies in NATO Europe who have strategic deterrents of their own or those where the dual-capable aircraft of NATO's theater nuclear capability are based. Thus,

[9] Wolfgang Panofsky points out that "attacks against the United States by states other than Russia, if they are to occur at all, and protection of allies against analogous attacks, are likely to be delivered by means other than ballistic missiles. The United States is vulnerable to such delivery across unguarded land boundaries, by air, by ships in harbor, and the like. Thus expending of large sums for defense against limited ballistic missile attacks seems inconsistent unless comparable efforts were instituted against other means of delivery. For example, the unsuccessful effort in drug interdiction has shown that an effective comprehensive defense seems unattainable without enormous expenditures and compromise to fundamental American values."

even in this context, strategic and tactical or theater missile defense objectives cannot be cleanly separated.

Part of the argument about defenses focuses on the desirability of such expenditures for U.S. continental defense, in relation to deterrence by offensive missiles and systems, in view of the treaty problems that the deployment of defenses would raise. In that context it has been noted that even under START II the United States will have enough nuclear weapons to devastate any attacker, in a situation that is unsymmetrical against any but the Russians. Therefore, it is argued by one side of the debate that the threat of totally devastating retaliation should be sufficient to deter an attack of the kind that has been of growing concern.

The other side of the dispute points to the attempt that is being made to differentiate between strategic defenses and those that we may either put in place or deploy on short notice to defend overseas base areas and allies as part of broader theater defense activity. There are differences in defenses designed to protect the U.S. homeland and those designed to be used at relatively short range in theater missile defense. Defense against theater ballistic missiles is acceptable within the constraints of the ABM treaty. However, as defenses are designed for boost-phase or ascent-phase intercept from greater distances, and as theater-level missile ranges increase, so that the speed and reach of terminal defenses must increase, the technical boundaries between theater missile defense and strategic defense of the U.S. homeland will blur. Russia has indicated that it feels strongly about what might appear as unilateral changes in the ABM treaty, and could hold the arms reductions of the START II treaty hostage to these concerns.

As this debate proceeds, the results of theater missile defense developments, and the results of allowable ballistic missile defense research and development, will influence it and will ultimately change the dynamics of the argument.

ANALYSIS, MODELING, AND PLANNING

Although a variety of theoretical works relate to deterrence, the practice is based mainly on the collective wisdom of those who have had to devise ways of preventing bad things from happening in specific cases. Collecting assessments of real experiences results in some general notions about whether deterrence worked or failed in the past and why. Often these notions are based on cases in which deterrence was not an explicit part of the strategy. Such efforts to apply the concept of deterrence retroactively are not useful because they often represent the use of selective examples to support a preconceived idea.

Deterrence has not benefited from a great deal of practical study because there are relatively few cases available in which an explicit strategy involving deterrence was developed. The major case, the strategy vis-à-vis the Soviet Union, offers only partial instruction applicable to present and future conditions. Furthermore, understanding of those cases in which deterrence played a major role tends to be one-sided because the necessary level of detailed information

from opponents is not available, although increased access to former senior Soviet officials and archives will now make more balanced studies possible. Deterrence theory has also been subject to implicit constraints imposed by the prevailing cultural values, and the "tyranny of the best estimate," in which alternatives posited by different members of the intelligence community are argued out and compromises are reached to give the "best estimate" of a situation—a process that tends to focus views according to majority judgments devised exclusively within our own value system.

Current research on deterrence expands to draw on notions derived from behavioral theory, systems analysis, decision science, and other related fields. At the microlevel, behavioral models include a simple linear set of relationships involving a stimulus affecting an organism resulting in a response followed by consequences. In thinking about such relationships in a more complex way for the purpose of understanding the dynamics of deterrence, the key is to focus on the orientation of the organism both as an individual and as an organization within a culture and an environment that can affect its or their calculations of potential risk, loss, and gain. In particular, this analysis should seek to identify the relevant needs, vulnerabilities, ideas, feelings, and experiences that are most likely to elicit certain behavioral responses.

Of particular significance is the focus on feedback in developing models of relevant systems. Models of decision making can usefully compare the options of a party to be deterred in terms of most likely, best-case, and worst-case outcomes, within the value system and environment of the party. Such models may incorporate different images of the opponent—such as one that assumes a pragmatic incrementalist, and another that assumes an exceedingly ambitious, frustrated leader—and different values, such as attitudes toward loss of human life. Moreover, given the difficulty of understanding and predicting how different personalities in different cultures and circumstances may behave, it is important to consider alternative images of specific adversaries and allies, when using these tools for assessment. The ability to vary context and the decision-making personalities of the individuals and the organizations in such analysis and modeling allows formal exploration of different possible responses, guards against premature or one-sided assessments, and encourages escape from the "tyranny of the best estimate."

Target analysis—i.e., analysis of the "deterree"—for the purpose of devising a strategy incorporating deterrence should clearly identify assumptions and include a comprehensive examination of the needs and vulnerabilities of the target. These analyses should be incorporated into net assessments of the United States compared with potential adversaries and allies. Net assessments should define the problem, identify U.S. and potential opponents' and coalition partners' objectives, and place the situation in the proper context of political, economic, and security trends and developments, and consequences of success and failure for each participant. Conclusions should include explicit judgments about the prospects for success and the level of confidence in the information and analytical results. Gaps in information should be identified along with key

indicators that suggest that assumptions may no longer be valid or developments are taking a different course, calling for new assessments.

Neither modeling nor gaming can predict outcomes with any confidence. However, modeling and gaming can provide useful insights to strengthen deterrence programs. They are particularly useful in understanding the dynamics of deterrence that often are not apparent in static analysis. Modeling can integrate a wide set of variables and may be particularly helpful in understanding key relationships and linkages that may not otherwise be apparent. Modeling also can help in understanding the likely consequences of alternative strategies. Similarly, gaming with expert surrogates provides opportunities to observe the interplay between two or more sides and to understand the rationale behind key responses in different value systems.

Both of these analytic tools can be useful in examining important strengths and weaknesses of all sides-—essential information for effective deterrence. Both can and should be applied a priori to anticipate potential crisis situations and the field of possible responses. They can be especially helpful to the group of "strategic worriers" called for above and for familiarizing strategic decision makers with situations and possible responses they may actually be called upon to face during their tenures.

2

IMPLICATIONS FOR DETERRENCE POLICY: TASKS FOR POLICY MAKERS

GEN Andrew J. Goodpaster, USA (retired), The Atlantic Council

Several important implications for policy makers may be drawn from the foregoing regarding deterrence measures as essential tools of security in the new era. They bear first of all on decisions that are needed in peacetime in determining military posture, including appropriate peacetime preparations for crisis contingencies. But they also highlight issues that will require decisions specific to situations at the time military operations actually have to be undertaken. In both types of situations, the environment is far more diverse and complex than the one we faced during the Cold War. Moreover, the experts do not agree on several important issues, including the role of nuclear weapons, the value of declaratory policies, and the need for more advanced types of missile defenses—particularly, defenses against ballistic missiles.

THE NEW DETERRENCE ENVIRONMENT

For the foreseeable future, the more difficult challenges for deterrence will probably not arise from other major powers, but rather from numerous and diverse contingencies created by lesser powers and also from a broader need to shape a stable and secure world order as free from violence as can reasonably be achieved.

- Since the prospect of war among the major powers is at an all-time low, the chief requirements for deterrence are to maintain appropriate nuclear weapons holdings among them and to sustain effective and reliable command and control over the weapons to ensure that they cannot be misused. Tight control of nuclear weapons materials must also be ensured. These deterrence requirements will constitute a primary task for policy makers for as long as nuclear weapons arsenals exist.
- A much more dynamic ingredient in deterrence policy, posture, and action for the United States and its allies will be the risks and threats, some active, some latent, that derive from nations less powerful but more likely to become the sources and the sites of disorder, armed conflict, and international instability. Many U.S. and allied interests may be put in jeopardy. They range from safety in the face of direct

- military or terrorist attack to unimpeded access to critical raw materials, free use of the seas, and provision of humanitarian aid and protection for the displaced populations that the warlike actions of these smaller states may generate. The main challenge will be to deal with such problems as far upstream as possible. This will require mobilizing international involvement and domestic support when the dangers appear neither clear nor direct.
- A third set of problems involves major powers such as China or Russia who may try to intimidate neighbors in territory that they once controlled or currently claim. These are particularly difficult cases as we try to engage Moscow and Beijing in Western political, economic, and security systems.

CREATING A FABRIC OF DETERRENCE

Given such a diverse array of problems, the main task for policy makers is to build a fabric of deterrence that embodies a sustained commitment to providing an increasing level of security, stability, and order among the peoples of the world. Accomplishing this task requires unprecedented cooperation between both international and domestic political leaders. Most importantly, the American public must be convinced that the United States should remain engaged abroad.

In weaving this fabric of deterrence, policy makers must focus on the following:

- **Developing appropriate deterrence capabilities.** Policy makers must carefully determine just what combination of deterrence capabilities--the visible and demonstrable power to punish serious violations of the norms of international behavior, deny success to aggression, impose heavy costs and losses on the aggressor--should be created and sustained to provide a high likelihood of deterrence against a wide variety of potential threats and risks.
- **Defining unacceptable behavior.** We must specify as clearly as possible, in both abstract terms and in specific situations as they develop, what behavior we want to deter. At one end of the spectrum, a nuclear attack on the United States or our allies is clearly unacceptable. The task becomes more difficult as we seek to deter lower levels of violence and less direct threats. In some cases we will need a clear message of which behavior will result in certain punishment. In others, we might decide to express displeasure about certain outcomes but to be ambiguous about the U.S. response, in order to avoid stimulating a reaction and to avoid providing implied openings, by omission, for the party we would deter.

- **Communicating U.S. will and intentions with credibility.** Some regimes are likely to challenge the United States because they believe we will be unable to build or sustain public or congressional support in the face of mounting or expected casualties, as demonstrated in Vietnam, Somalia, and the arguments about Bosnia. To meet these challenges, the United States must be perceived as willing to pay the costs in lives and resources, and to stay the course with the needed military skill and political stamina. However, leaders cannot determine in advance the threshold that will result in swift and certain U.S. response because each case involves a unique set of circumstances, and any previously announced set of criteria could tacitly permit lower-level violations of human rights and other important international norms. Therefore, effective deterrence must involve a dynamic process in which policies are frequently reviewed to determine whether underlying assumptions remain valid, and the case for U.S. action must continually be made to the American public and Congress. It will be important to have established credibility through previous actions in order to disabuse the potential aggressor of a belief that we would be self-deterred by internal divisions, past expressions of a lack of interest in events that may have appeared similar to the ones in question, logistic limitations, other force commitments, international pressures, and the like.
- **Building coalitions.** Adding to deterrent effect will be a demonstrated ability to build coalitions, an evident availability of alliance command-and-control organizations, a history of multinational peacekeeping exercises, and a record of gaining multilateral participation. Such should be a goal of policy makers.
- **Building the foundation for information and understanding.** An important task for our national leaders is to prepare in advance the information base needed to deal with crisis situations when they arise, and when deterrence must act. Preparatory steps include:

—*Understanding the values of potential adversaries.* Ultimately, our ability to deter is a function of what inducements or pressure we can bring to bear on specific leaders. Therefore, understanding who has what kinds of influence within a target regime, as well as what they hold dear within their own value systems, is important. Simple categorizations of "moderates" and "hardliners" are not useful and often are misleading. We need to know how best to influence specific persons, and the list of who they are needs to be continuously updated. A task for diplomats, military leaders, and the intelligence community is to become as well

acquainted as possible with current and future foreign leaders, their value systems, nd the power structures within which they must decide on accepting costs and risks. This requirement places a high premium on encouraging a broad set of exchanges at many levels, and avoiding automatic curtailing of such exchanges when relations become strained.

—*Intelligence.* Our intelligence capabilities must, to the greatest extent feasible, be shaped and sized to foresee and assess accurately and in a timely way the circumstances that may be encountered. The need is greater now than ever before.

—*Assessment.* Policy makers will have to establish mechanisms to achieve a continuing flow of background analyses and to participate regularly in simulations, games, and exercises that anticipate the full range of deterrence problems. This will help leaders to better understand complex issues they may face and to make better-informed decisions. Asking the right questions has been a key ingredient in the more effective cases of national security decision making.

SOME DIFFICULT CHOICES

Some deterrence policy matters remain unresolved in the present environment; indeed, the environment creates uncertainty about how they should be resolved. In many cases, full resolution will be possible only under the circumstances of specific situations. In the meantime, policy makers may have to resolve them sufficiently to make policy and program choices, or to make partial or hedging program decisions pending further resolution of the issues. Chief among these policy matters are the following:

- **Reliance on existential deterrence.** The extent to which "existential deterrence"—simply the existence of powerful forces capable of inflicting punishment, denying success, imposing costs—can by itself achieve the deterrence that is being sought must be decided as each situation develops. Action beyond mere existence, such as moving forces or calculated applications of force, may be needed to demonstrate the power of such forces, to position them for swift employment, and to show readiness and resolve to commit them fully if necessary. The timing and force levels of such moves will be critical.
- **The role and use of nuclear weapons.** Nuclear weapons, at whatever numbers our treaty commitments allow, will remain the ultimate guarantee of U.S. national security. Our national security policy includes steps to preclude the proliferation of nuclear weapons and also of chemical and biological weapons. But the precise role of nuclear

weapons in the post-Cold War environment is a matter of controversy. Most agree that the threat of nuclear weapons use is appropriate to deter the threat or use of nuclear weapons by adversaries against us and also against our close allies, most of whom do not have nuclear holdings. There is an issue about the extent to which nuclear weapons can be supplanted in deterrence by the threat of using advanced, precision-guided conventional weapons against the bases of political, economic, and military power of an aggressor. Experts also disagree on whether it would be appropriate to invoke a nuclear response to the use of chemical and/or biological weapons. They disagree, too, on whether nuclear weapons should be used to deter conventional attacks on vital U.S. interests or on our close allies; the prospect of such a need has nearly vanished with the disappearance of the NATO-Warsaw Pact confrontation, but it might arise in another context in the future. All these issues await resolution as international relationships in the post-Cold War world evolve.

- **Declaratory policies.** The relative merits of declaratory policies, such as "no first use" of nuclear weapons, also are widely contested by experts and require periodic review. Some argue that such assurances in the abstract are simply not credible for real situations and therefore are not useful for the purposes of deterrence. Others argue that declaratory policies are useful in gaining reductions in nuclear inventories by the major powers and increasing the chances of cooperation by non-nuclear weapons states. In the last resort, the president will decide what kind and level of military force a situation merits. However, such policies can have important implications for our force posture and plans. In the specific case of "no first use" of nuclear weapons, whether to enunciate the policy and, if so, whether the policy would forego such use in all circumstances, or be limited to no first use against those who are without nuclear weapons, or without any of the other weapons of mass destruction, are matters to be considered.
- **Missile defenses.** The extent to which the United States should develop and deploy active missile defenses remains highly controversial. Proponents argue that some level of national missile defense is needed even if it requires invalidating the Antiballistic Missile (ABM) Treaty. Others argue that any missile defense can be defeated far more cheaply than the costs of developing and deploying such a system—including technical countermeasures against the missile defenses or attack modes that bypass them altogether. Another concern is the belief of many that the ABM treaty is essential to maintaining a stable nuclear balance with Russia. Leaders in France, the United Kingdom, and elsewhere are worried that their ability to deter Russia would be undermined if Moscow were no longer held to

the ABM treaty. Theater missile defenses, currently permitted under the ABM treaty, could be forced by the evolution of the theater-level threat to grow in capability to the point that their technical characteristics also challenge some of the ABM treaty constraints. This issue will require continual review in terms of threats, costs, and effectiveness; impact on the security of the United States, our allies, and others; and other important factors.

CONCLUDING REMARKS

The agenda laid out above is a substantial one for policy makers, with tasks falling into two main categories. First are preparatory actions and capabilities that should be brought into existence in peacetime, including, in particular, the size, composition, deployment, and states of readiness of our military forces, together with their command, control, communications, and intelligence (C^3I), logistics (especially including mobility and prepositioning), and many other elements of military strength. Second, for actions that can be taken only when a contingency actually occurs, or is thought to be about to occur, there should be plans well thought out in advance, reflected in training, exercises, and well-tested capabilities of our forces for the kinds of operations that may be required. The policy alternatives should be reviewed continually, so that the availability and viability of alternatives can be assessed on the basis of forethought in regard to each situation as it arises.

And finally, from these deterrent capabilities and preparations will derive the support for the condition of security, stability, and world order that should be our broader goal. It will be the task of policy makers to assess the adequacy of this support and augment it if required.

3

Significance of Post-Cold War Deterrence Concepts for the U.S. Navy and Marine Corps

INTRODUCTION

The first two chapters of this report discuss the meaning of deterrence in the post-Cold War period, the key elements of a post-Cold War deterrence strategy, and critical issues in devising such a strategy. This chapter examines the significance of these observations for the U.S. Navy and Marine Corps. It first identifies the demands of a post-Cold War deterrence strategy and provides a short list of objectives for such a strategy. Quantitative and qualitative measures to support judgments about the potential success or failure of deterrence are then outlined. Such measures will bear on the suitability of the naval forces to meet the objectives of deterrence. This chapter then examines capabilities of the U.S. naval forces that can especially contribute to fulfilling deterrence objectives. The final section examines the utility of models, games, and simulations as decision aids in improving the naval forces' understanding of situations calling for deterrence, and in improving the potential for deterrent actions to be successful.

The terms of reference for this study inquire about the "strengths and weaknesses of existing and emerging technologies and systems" to contribute to the naval forces' part in carrying out deterrence strategies. As discussed in this chapter, technology is considered to be a technical means of achieving a practical purpose. In recent years, amidst great concern about U.S. retention of its military technical superiority, certain underlying technical capabilities that enable the construction of the military systems discussed in this report have come to be termed "critical technologies." However, as indicated by much of the discussion in Chapters 1 and 2, the technologies as such can have no intrinsic deterrence value independent of their articulation in military systems and the application of those systems to solving real-world problems (whether the systems are a class of weapons such as nuclear weapons or an entire force such as the strategic ballistic missile submarine (SSBN) force). Such use is described by enumeration of capabilities that the systems confer on their users. Thus this chapter concentrates on *capabilities needed* by the naval forces to help carry out those deterrence strategies.

The capabilities needed include military systems as well as qualitative proficiency in intelligence, training, organization, and implementation of innovative concepts of operation. The technologies needed both to provide the systems and to support the qualitative proficiency exist today, either embedded in current systems and the activities using them or being applied to the development of advanced systems and activities. It is the judgment of the Naval

Studies Board in carrying out this review that appropriate application of diverse known technologies and the existing or developmental capabilities they support (which are described in connection with the discussion of specific force capabilities needed), rather than pursuit of new technologies, is the most important current need in advancing the naval forces' contribution to a national deterrence strategy.

OBJECTIVES AND METRICS IN DETERRENCE STRATEGY

Objectives of Deterrence

The basic objective of deterrence remains what it has been since the origin of the strategic concept of deterrence during the Cold War: to influence the behavior of nations so that they do not undertake aggression against the United States and U.S. interests across the world. During the Cold War, deterrence strategy was aimed mainly at preventing aggression by the hostile Communist power centers—the USSR and its allies, Communist China, and North Korea. In particular, the strategy was devised to prevent a nuclear attack by the USSR or China.

The range of nations and other groups and the types of behavior we seek to deter have expanded enormously since the Cold War. Current U.S. security concerns must still include defense of the U.S. homeland and protection of allies with whom we have treaty obligations guaranteeing our mutual security. But they also extend to guarding a broad range of interests that directly and indirectly affect our national security. While these broader concerns have always been apparent, they are now articulated more explicitly as part of our need to deter actions inimical to our national security. The concerns range from free use of the seas, the airways, and space for international commerce and security-related activities, through protection of sources of key resources and the friendly nations that control and furnish them, to encouraging the growth of a community of democratic nations in a peacefully evolving world through which our own security will be enhanced. The U.S.-furnished security umbrella may thus be extended by the National Command Authorities (NCA) and Congress to include other nations or regions with which we do not have explicit mutual defense agreements.

The nature of the aggression with which we are now concerned also includes many kinds of activities different from military attack. International terrorism, whether sponsored by rogue nations or undertaken by transnational groups in furtherance of broad agendas that hostile nations may share, has become a threat and therefore an object of deterrence policy. The spread of nuclear weapons and other weapons of mass destruction is now a top-priority national security concern. Economic warfare, political subversion, and even humanitarian concerns engendered by widespread human suffering attending ethnic conflict, by the breakdown of nations' internal order, and by regional conflict have all come to the fore as affecting U.S. security directly or indirectly in many ways.

The task of deterring activities that are inimical to our interests has become equally broad. We must detect the potential onset of a hostile action and then dissuade or otherwise deter the would-be aggressor from undertaking it by posing a credible threat of punishment that the aggressor would find unacceptable and, especially, a clear plan convincing enough to show that success of the aggressive action will be denied. Sometimes the dissuasion will involve positive inducements to change behavior and reassurance that the "deterree" will not be attacked. The approach taken to accomplish deterrence will involve a range of activities on our part, in the political, diplomatic, economic, and military spheres.

Thus, a strategy of deterrence must now address much of the threatening or violent activity on the international scene that can affect the United States, and deterring such activity can encompass almost all U.S. foreign policy actions. However, it is apparent that the potential or actual use of effective military force will underlie all deterrence efforts, perhaps including those that respond to economic or political actions that appear sufficiently threatening to our security. The "use" of military force may involve as little as moving forces into position to act rapidly, or selected military actions involving armed conflict. Moreover, deterrence may fail, especially in cases where communications may be misunderstood or where, as in terrorism, the aggressor believes a strategy has been devised that can deny the opportunity for reprisal. If deterrence fails, a military response must deny success to the aggressor, and this may involve rendering the aggressor incapable of further aggression for the immediate or for the long-term future, as circumstances dictate.

Based on the broad national security considerations sketched above, U.S. military forces must be able to meet the following deterrence objectives:

- To deter attack on the United States and its allies by external forces ranging from the armed forces of hostile nations to national or multinational terrorist groups;
- To deter similar attacks on allies with whom we have mutual security treaties;
- To deter aggression against our own and our allies' vital interests and security in areas when we agree those interests and security are at stake;
- To deter the proliferation of nuclear weapons and other weapons of mass destruction; and
- To deter the use of nuclear weapons and other weapons of mass destruction in military conflict, especially when our own and our allies' national security interests are at stake.

How to Measure the Chances for Success

Before proceeding to a discussion of Navy and Marine Corps military capabilities required to enhance the success of deterrent strategy, it is useful to review the criteria by which various deterrence alternatives can be compared, how it might be judged whether any particular act of deterrence might work, and how that would be demonstrated.

Deterrence capacity or potential of deterrence cannot be measured quantitatively. The motivation for aggressive acts, the planning, and the perception of advantage or disadvantage in possible responses to those acts, or even of the likelihood of various levels of response, all reside within the minds of the leaders and members of the nations or groups involved. However well we believe we understand the driving factors, that comprehension can never be perfect. Indeed, in many cases we may not know whether "deterrence" worked, even after the fact. For example, the U.S. deployment of forces to the Persian Gulf in October 1994 was intended to discourage amassing Iraqi forces from crossing into Kuwait again. Although those Iraqi forces stood down, it is not known whether their initial intent was to invade Kuwait, whether there was some other objective in amassing those forces, or what they might have done to exploit a target of opportunity if we had not reacted.

Thus, in the final analysis, assessment of the potential effectiveness of a deterrence policy or action is highly subjective. Nevertheless, certain metrics can play a role in guiding and refining such judgments. The key measures for gauging how successful deterrence might be in protecting the interests of the United States and its allies are summarized below. In this formulation it should be understood that the term "metrics" refers to qualitative as well as quantitative measures.

- **Detection.** To what extent can we determine whether a hostile or threatening action in some part of the world is possible, potentially invited by circumstances, or actually in the making? Is our intelligence, and especially our intelligence analysis, sufficiently on the alert and effective enough to keep us from being surprised by *a fait accompli?*
- **Evaluation.** How serious is the threat to U.S. interests and those of our allies? What are the consequences for those interests, and for U.S. security, if the threatened action is successful? What steps are likely to counter the threat effectively? In particular, is a military response in order, or required? How much are we willing to risk-in treasure, casualties, impact on our international position-by responding, or by not responding, especially militarily? Have we begun to plan for an action? Can plans be completed in time?
- **Coalition building.** Is an alliance in place that can help? Must it be alerted? Must a coalition be built to meet unique circumstances? Are the elements of a new coalition in place, or must we start from scratch?

- Have we started, given that a risk of aggression is detected? What actions must be taken to ensure the coalition's effectiveness—e.g., interoperable communications, commonly understood command-and control doctrines, and so on. What deterrence actions could be undertaken to enlarge or solidify the coalition? What modifications to original plans would they entail?
- **Level of confidence in our understanding of the key participants.** How well do we understand what motivates the adversary and the risks the adversary might be willing to take, within the opponent's own value system? Do we understand how the opponent would view any deterrent actions we might take, and what the response might be? What does the adversary hold dear, so that the threat of its loss or failure will discourage the anticipated hostile action (noting, for example, that, as with Egypt in the 1973 Arab-Israeli war, a loss might matter less than simply undertaking the conflict)? What inducements might elicit a positive response to attempts at dissuasion? The most important aspect of these judgments is that they be free of preconceptions arising from our own value system, and that they account for the unexpected and what may in our view be irrational. Similar considerations will apply to actual or potential coalition partners, including, at times, our closest allies. All the metrics described here must be viewed in the context of this understanding of the opponent and the other participants in an action.
- **Appropriateness of the planned action.** Will a military response-e.g., movement of forces to an area or a heightening of the alert status of forces—have the desired effect or will it be counterproductive, or possibly stimulate a preemptive attack? Will positive inducements or "reassurance" be more suited to the situation? Or is a combination of such measures called for?
- **Appropriateness of the military response.** Are the forces to be brought to bear the appropriate ones for the situation? Are they the right size, and do they have the right capability, to meet and defeat the anticipated hostile move? This issue must be judged with respect to three aspects: our own understanding of the forces needed to respond to the anticipated aggression, the opponent's perception of the forces' capability, and our allies' or coalition partners' perception of the forces' appropriateness in view of their own obligation to commit forces. It may not be appropriate or necessary to deploy instantly the full force that may ultimately be involved, but we should be convinced that we can build up to that capability when we need to, and the ability to do so should be visible as a latent promise to the others involved.

- **Timing.** The response must be appropriately timed to anticipate, and therefore forestall, any hostile moves on the adversary's part; it must be rapid enough to bring the requisite military force to bear when it is needed at the place where it is needed; and it must be appropriately timed to communicate intent and capability, consistent with the adversary's planning cycle.
- **Communication and credibility.** We must judge whether we have adequately communicated-by message, movement of forces, or other means, or several means together-our intended response in the event that an action we wish to deter is taken, and we must judge the credibility of the communication in light of both present and prior circumstances. Any communication must convey the national will to undertake the action, despite our transparent and often argumentative public decision process. If circumstances suggest that communications have an element of ambiguity (in order not to be provocative at the moment), then we should judge whether we have made clear what the alternatives and their respective consequences are; vague statements subject to misinterpretation should be avoided. And, we must be clear about what prior events may indicate about the credibility of the currently promised response.

These metrics can form a checklist against which the potential utility and effectiveness of planned deterrence policies, strategies, and actions, in both general and specific circumstances, may be tested. They are also the metrics involved in judgments about the force requirements and the decision aids that are reviewed below.[1]

ENSURING U.S. NAVAL FORCES' CAPABILITY FOR DETERRENCE

U.S. naval forces include the Navy and the Marine Corps and all auxiliary elements needed to operate them, and in time of war, the U.S. Coast Guard. Every element of the naval force structure contributes to naval forces' operations in peace, deterrence, and war. Nevertheless, special aspects of naval force structure and operation have an immediate and direct bearing on deterrence policy and strategy. These aspects range from essential combat capabilities to matters of support and preparation that are equally important and even more complex to implement.

Sustain the Strategic Ballistic Missile Submarine Force

It is likely that nuclear weapons held by the United States and its allies will in the future be used only to deter the use of nuclear weapons by others. This

[1] "Requirements" in the sense of "needs," not in the sense of the formal "requirements process" by which military systems are acquired.

will include deterrence of nuclear attacks on the United States and attacks on allied countries, including those, like Germany and Japan, that have renounced acquisition of nuclear weapons in favor of reliance on U.S. extended deterrence. As pointed out in Chapters 1 and 2, however, the threat to use nuclear weapons in retaliation may be important in particular circumstances to deter the use of chemical and biological weapons and even to deter overwhelming conventional attacks on close allies. These latter applications, beyond the use of nuclear weapons to deter the use of nuclear weapons, will likely not be decided upon until specific circumstances present the need for decision. Whatever the ultimate policy decisions may be, the weapons and the capability to use them must be available, even for the most restrictive policy.

Moreover, with the uncertainties of nuclear weapons holdings by other, possibly hostile nations, and the risk of spreading nuclear weapons capability either through leakage from former Soviet stockpiles or by the failure of restraints on nuclear proliferation, the nuclear forces we retain "must be sufficient to deter any combination of attackers who may have such weapons from using them against us or our closest allies" (Chapter 1, p. 20). The START treaties limit the numbers and types of strategic delivery systems, but there is still room within those limits for an adequate, devastating response to a nuclear attack and for other uses should the NCA so decide.

The SSBN force accounts for a large share of the U.S. strategic force posture under current provisions of the START treaties. The qualities that have made it especially valuable—its essential invulnerability, its stealth, its flexibility and ability to change operating areas, its long time on station— commend it as a continuing key element of future deterrence strategy. Indeed, these qualities will be even more valuable as the world becomes more complex and as potential sources of attack, and uncertainty about the source of any particular attack, increase. These qualities of the SSBN force, in conjunction with the needs expressed above, argue for its retention, and for its continuing modernization and ongoing readiness for action, into the indefinite future. Since adversaries in a prospective action may not be known until shortly before a conflict begins, and since the kinds of targets may depend on ad hoc decisions about the circumstances in which nuclear weapons may be used, part of the readiness for action must include the ability to change targeting and warhead mixes rapidly. Clearly, such readiness would require receipt of a broad range of intelligence inputs to an intelligence database that is routinely updated with minimum time lag, in addition to a system that would allow those inputs to be applied on short notice.

Increase the Ratio of Offensive to Defensive Capability

During the Cold War era, the ratio of offensive to defensive systems and investment was conditioned by preparation for possible conflict with the USSR and its allies. U.S. naval forces were confronted with the need to be able to counter a highly organized opponent possessing effective weapons, a highly

integrated command-and-control system, and a worldwide reach. During the 45 years of preparation and readiness to meet such a contingency, U.S. naval forces built a formidable defensive and offensive capability. However, the nature of anticipated opposition has now changed, while new kinds of weapons and, especially, information technology, now enable us to better focus our deterrent capabilities, including offensive forces.

While the military capability of some regional powers will continue to be formidable,[2] it will at least for the foreseeable future lack the degree of integration and the geographic scope that characterized Soviet forces. Thus the defenses built into our naval forces should, *if they continue to evolve and incorporate new technology,* enable the United States to overcome attacks by opposing regional powers for a long time to come. It is essential that military commanders and leaders fully understand the significance of the new naval force technology and manage its introduction and use so as to gain its full capability for helping to achieve deterrence. Moreover, the military capacity provided by the modern and improving naval force defenses, the greater mobility and speed of the Marine Corps in amphibious operations, and the advancing weaponry and command, control, communications, computing, and intelligence (C^3I) systems will allow even defensive capability to be used in ways that advance military offensive strength. Moreover, the nature of the potential opposition has changed, requiring a more shoreward orientation of the fleet now that the midocean threat of Soviet naval forces has declined. The time thus appears appropriate to think about changing the relative offensive and defensive orientations of naval forces' capability and of investment in the naval forces, especially in the areas outlined below. In doing this it should be borne in mind that the division between "offense" and "defense" in naval systems is not hard and fast. Defensive capabilities that allow naval forces to carry their offensive combat power closer to the enemy, and to protect areas and installations outside the naval force itself, can be considered as contributing to the force's offensive capability.

Although the following key areas are discussed separately, they form a continuum of mutually reinforcing capabilities.

• **Precision attack.** The importance of responding rapidly to aggression and minimizing collateral damage and civilian casualties, as well as U.S. casualties, is emphasized in Chapters 1 and 2. The capability now exists to locate targets and attack them precisely from long distances, using either attack airplanes with guided weapons or long-range guided missiles launched from fleet combatants or attack submarines. This capability may also be appropriate for responding to the threatened or

[2] Naval Studies Board, National Research Council, *Future Aircraft Carrier Technology, Vol. I,* National Academy Press, Washington, D.C., 1991; and *The Navy and Marine Corps in Regional Conflict,* 1996. See also Defense Science Board, *The Navy and Marine Corps in Regional Conflict: Investments for 21st Century Military Superiority,* Executive Summary Briefing, November 1995.

hostile use of weapons of mass destruction, and it has become an essential element of a conventional-weapons military response that can rapidly deny success to an aggressor's attack. Much remains to be done, and should be done, to ensure the full development of the precision attack capability of the naval forces.[3] Especially worthy of note is the need to provide, in the joint operational environment and using all-source data, full situational awareness, accurate targeting, and effective joint and combined command and control of the precision attack systems and forces, in addition to accurate guided weapons suitable to the problem.

• **Theater missile defense.** Ballistic missiles with ranges from 200 to over 1,000 miles are proliferating among large and small nations around the world. Even if they do not deliver the weapons of mass destruction that they are capable of delivering, their use with conventional warheads—and often even their presence alone-—can have a profound political as well as military impact on regional conflict. As evidenced during the Gulf War, the application of even a limited defense against such attacks can also have important political and military significance. Defenses against ballistic missile attack will, in the future, be an even more important part of our developing, joint military capability. The theater missile defense (TMD) systems will ultimately cover the gamut of defense possibilities, from finding and destroying command centers and launchers, through destruction of missiles in boost and ascent phase to prevent dispersal of chemical and bacteriological submunitions and to prevent damage by nuclear warheads either detonating within damage range or following purely ballistic trajectories to their targets after intercept, to terminal defense against weapons that leak through. The imperative of preventing effective attacks by ballistic missiles that may carry warheads of mass destruction leads to the concept of placing a "cap" over an aggressor state to prevent such attacks from reaching beyond the aggressor's borders, with terminal defense as final "insurance." In this sense, TMD enhances overall offensive capability.

Naval TMD will have the value of mobility—the ability to move into place with high readiness on short notice—on ships (ranging from carriers with attack aviation to surface combatants with vertical launch bays) configured to use the defenses, usually in conjunction with joint surveillance, warning, and targeting capabilities furnished by other forces available to the regional commander in chief (CINC). Naval TMD can thus provide "offensive defense" rapidly, from the open ocean or from positions near the coast or even in a port. Because of its

[3] Naval Studies Board, National Research Council, The Navy and Marine Corps in Regional Conflict, 1996.

mobility, naval TMD may be difficult for an aggressor's forces to target. In transmitting signals of resolve and in demonstrating quickly available capability, movement of naval TMD forces would have high deterrence value in brewing crises. For all these reasons, fleet TMD will be an important tool in implementing national deterrence strategy, and it must be part of the naval forces.

• **Undersea warfare-conventional attack submarines and mines.** The undersea environment that made possible the nuclear deterrence achieved through the SSBN force offers similar possibilities for deterrence of potential regional conflicts along the littoral.[4] U.S. conventional attack submarines such as the improved Los Angeles class (SSN 688I) and the new nuclear attack submarine that is being designed at the time of this writing can launch highly accurate land attack missiles with conventional warheads, capable of deep penetration of an opponent's territory to strike against critical elements of the opponent's war-making potential and national command structure, with devastating effect. The power of such missile attacks was demonstarted during the Gulf War and in the 1993 raid against the Iraqi intelligence headquarters.

As in the strategic deterrence case, the existence of this force guarantees the U.S. ability to punish an aggressor while the force itself remains essentially invulnerable to an opponent's anticipatory or retaliatory actions. While it may be argued that this part of the deterrent force is invisible and therefore would have uncertain value for deterrence during the acute phase of a crisis, appropriate public discussion can make clear the existence of the force and the damage that it can do (as was the case with the strategic SSBN force). It could also be indicated to a would-be aggressor at a critical time that the force is in place and ready for action. The "deterree" would not be safe in assuming that such an indication is false, thereby adding to its deterrent value.

Finally, the submarine force is in a position to carry out surveillance and other useful military operations as enhancements to the capability of the remaining naval force deterrent. This capability includes offensive mine warfare to deny an opponent the use of certain seas or even the opponent's own harbors, should a potential or actual trangression be serious enough to warrant offensive mine deployments. Thus, supporting and improving all aspects of the deterrent value of the conventional undersea force in national policy and force planning activities deserve serious attention at all levels of Navy and national security planning.

[4] Naval Studies Board, National Research Council, *The Navy and Marine Corps in Regional Conflict,* 1996.

Quiet, modern submarines and the ability to use mine warfare are also among the capabilities accruing to many regional powers. Antisubmarine warfare during the Cold War was viewed to a great extent as a means of protecting the U.S. fleet from submarine attack and as a means for preventing enemy SSBNs from launching their ballistic missiles against the United States and our allies. While these missions continue, they are overshadowed in potential regional conflicts by the need to keep submarines—which may be conventionally powered or nuclear powered—from interfering with fleet movements and shipping in littoral waters where we may be responding to the threat of an attack. Those that have the capacity to do so must also be prevented from launching cruise missiles against friendly installations on shore. As in TMD, defending against such submarines will run the gamut from attacking their bases and support facilities to finding and sinking them, as well as ensuring effective terminal defense against torpedos and cruise missiles. Having a demonstrable capability to clear coastal waters of hostile submarines is a way of showing that we can carry the war to the opponent by denying the use of a key military system and destroying that system, and is therefore an essential contributor to the naval forces' deterrent value.

Similarly, mine warfare in the ocean and along the littoral, even the use of mines of antique vintage, is a widely available capability. It can deny ships' movement and the ability to land Marine Corps forces in crisis zones. The ability to neutralize, clear, or avoid mine fields is crucial to U.S. naval forces' successful response to crises and military action in crises. Part of this ability will be to track, via the naval and national intelligence systems, a potential aggressor's mining capability from manufacture to storage to deployment and then to counter it, either by destroying the mines ashore or by otherwise denying the emplacement of minefields or by being able to clear such fields from international or coastal waters with relative impunity after they have been emplaced. Knowledge that the United States has invested in this capability, demonstration (through exercises or actual operations) that it is effective, and movement of the appropriate forces into place in time of crisis must be part of the naval forces' contribution to deterrence. In a recent white paper the chief of naval operations emphasized the importance of countermine warfare. [5] Greatly expanded efforts, with high priority, are planned for this area by the naval forces;

[5] Memorandum by ADM J.M. Boorda, USN, Chief of Naval Operations, *Mine Countermeasures—An Integral Part of Our Strategy and Forces,* 13 December 1995; and *Concept of Operationsfor Mine Countermeasures in the 21st Century,* Mine Warfare Branch, Expeditionary Warfare Division, Office of the Chief of Naval Operations, September 1995.

they should be continued and encouraged as part of the national deterrence strategy.[6]

• **Effective blockade.** Naval forces must be able to establish an effective blockade when called upon. One of the means available to the United States and its allies to combat aggression is denial of movement of supplies, people, and materiel into or out of an aggressor's country. Without arguing the relative merits of sanctions—a diplomatic term that covers forms of blockade—as a tool of foreign policy, it can be observed that the United States, acting with its allies and often through the United Nations, has invoked sanctions as either punishment or threat, as a part of coercive diplomacy intended to deter the onset or continuation of aggressive acts that would be harmful to U.S. interests. In many cases the sanctions have had only limited success in achieving the objectives for which they were invoked. One reason for only partial success has been the ability of the object of the sanctions to avoid their full effect by evading the blockade through smuggling. Naval forces are the chosen instrument to enforce blockades against any entity with a coastline and waterways. To be effective, a blockade needs the ability to detect smugglers, who will operate at odd times, in relatively inaccessible areas, and disguised to appear as part of permitted commerce. U.S. naval forces must be able to intercept them and to confiscate their goods or to turn them back to their sources. All this must be done in a way that does not inflict casualties on permitted commerce and on those engaged in such commerce, even while allowing the forces to overcome military or paramilitary resistance

Although the effective enforcement of a blockade may appear inherent in naval forces' combat capabilities, to be fully effective those capabilities must be explicitly trained for and designed to operate well in the special circumstances that blockades require—operations against clandestine forces in difficult environments. Preparing for such operations in the interest of deterring larger conflicts is a capability that the Navy Department must consciously cultivate.

Sustain the Naval Forces' Forward Presence

One of the elements of deterrence is the "existential deterrent": the visible existence of military forces that can be called upon to carry out the military actions of a deterrence strategy. However, as noted in Chapter 1 and in several of the appendixes of this report, there is room for a potential aggressor to doubt whether the forces in existence will be used without some appropriately timed signal affirming the will to use them. Thus, movement of appropriate forces when some undesired international action is a prospect is an important part of a

[6] Naval Studies Board, National Research Council, Mine Countermeasures Technology, Vols. I-IV, National Academy Press, Washington, D.C., 1993-1994.

deterrence strategy. Such "movement" can take many forms: heightened alert of intercontinental missile forces; movement of especially vulnerable force elements out of harm's way, for example, moving ships out of a harbor or aircraft off an airfield, or moving potential hostages away from the risk of capture before a military attack; visible attention to minefields, both offensive and defensive; or movement of powerful combat forces into position for a rapid response. In connection with the last item, the amount of force moved, in relation to the amount of force initially in place, is also a relevant parameter— moving a large force to augment a small force in place may send a stronger signal than the one sent by making a small addition to a large force in place.

The continuum of activity across which deterrence must be effective ranges from small aggressive acts that are threatening in the long run to major military attacks. The "low end" tends to be the most "fuzzy," presenting the greatest likelihood of some needed activity by the U.S. military, as well as the greatest uncertainty about whether deterrence will work; offering the greatest scope for action by non-national groups; and increasing the likelihood of national debate about potential U.S. involvement. In response to low-end activity, timely actions suited to the environment and the situation, carried out by forward forces able to demonstrate a capability for rapid follow-up by major force, may have a better chance of deterring undesirable developments than would forces brought in after the initiation of an incident. The forward posture of these forces would also enable a more rapid response should initial deterrence fail, and such forces would be better positioned to help deter escalation. Included in the scope of action for such forward forces are operations other than war, heightened surveillance, and force augmentation in response to "testing" by a potential opponent.

No matter what particular maneuvers are needed to deter an impending crisis, the force to be moved must be flexible and as nearly in place as possible to enable a timely and appropriate response or anticipatory move. Naval forces in forward posture are ideally suited to these requirements. They can be kept on station, visible, for extended periods while preparing for conflict or engaging peacefully with potential coalition partners, or even opponents, in acts intended either to make crisis response more effective or to avert crises. They can undertake preparatory maneuvers without infringing any nation's sovereignty and without placing pressure on a country to accept U.S. forces on its soil at especially sensitive times, and they can apply military power rapidly from the sea in locations where there are no bases into which land-based combat forces can deploy.

Another aspect of a forward posture is the Maritime Prepositioning Force (MPF), maintained by the Army and the Marine Corps on ships in safe harbors closer to expected theaters of operation than the continental United States. The MFP enables rapid deployment of combat personnel by air and rapid "marrying up" of personnel and equipment in or near the theater of operations. A key element of the naval forces' mission in the forward area is protecting MPF ships

and ensuring their safe transit to an operational area, thus contributing essential strength to the forward posture of those forces.

Incorporate Deterrence in the Overall Naval Forces' Planning Process

It is clear that all aspects of naval force structure can at one time or another be involved in deterrence actions as well as in military action that may result if deterrence fails. Although some especially important aspects of the naval force structure bearing on deterrence are clearly not separable from the force structure and operational capability as a whole, they nevertheless require emphasis in preparing U.S. naval forces to participate in a national deterrence strategy. Thus, the explicit concept of deterrence must be incorporated into the overall naval forces' planning process. This is of critical importance in three areas: intelligence, training, and budgeting.

- **Intelligence.** The need for intelligence to inform deterrence actions goes beyond the usual description of a threat that includes order of battle, force size, and questions of technical capability with which military forces-as distinct from national intelligence agencies-tend to be concerned in their peacetime planning. Since naval forces in a forward posture during peacetime are in close contact with both friends and potential foes as a routine matter, they may be positioned so as to gain understanding of those external forces that bears on adversaries' values, intentions, and plans for diverse contingencies. This knowledge may come about by purposeful intelligence activity, including human intelligence gathering and surveillance leading to detection and interpretation of significant force movements and related matters, or by simple observation and growing knowledge of indigenous forces and actors through day-to-day contact. In any case, the relevance of such matters and therefore the need to gather data in these areas must be emphasized in naval forces' intelligence activity and in the naval forces' contributions to and acceptance of inputs from joint intelligence activities.
- **Training.** Naval forces' training for actual combat is a usual matter of concern in force planning and needs no additional comment in the current context. Training for effective implementation of low-end deterrence strategy places added requirements on the training process. It must include attention to operations other than war, since it is in these operations that much of the interplay of forces that will enable or inhibit deterrence will take place. In addition, it must be recognized as a factor in the use of military force today that the news media will be present, and that their reports from the scene will have an important impact on public opinion and on national views of the nature and

appropriateness of responses in a developing crisis. Finally, military forces and commanders must recognize that there may well be imperatives for the national civilian leadership that dictate the application of military force under conditions of force level, environment, and timing that are less than desirable by strictly military criteria. All this argues strongly for an emphasis on operations other than war and, in addition, for awareness of the potentially powerful influence of factors extraneous to military operations per se, in training naval forces for participation in a deterrence strategy.

- **Budgeting.** It was not an objective of this analysis to ascertain whether the budget levels or the budgeting process for the naval forces are adequate to meet national deterrence objectives. However, the importance of including the qualities of the forces that especially contribute to deterrence merits comment with regard to budgeting considerations. It is apparent that the kind of force planning that will especially contribute to successful deterrence involves a seamless progression from designating the appropriate forces, through integrating their various capabilities, to ensuring that the parts of the forces especially relevant to a deterrence strategy (such as the ability to move forces into place rapidly) are not neglected. The budgeting process that was in effect during the Cold War tended to separate interrelated force elements into different categories, so that specific systems, training, and supporting infrastructure were all considered separately from each other. In such a process, the funding levels and objectives can easily assume unbalanced and inappropriate relationships with each other. The most effective allocation of resources, for deterrence as well as for combat missions, could not be guaranteed under such circumstances.

  The older system is gradually being supplanted by the Joint Requirements Oversight Council process, being instituted through the Joint Staff as a result of the Goldwater-Nichols Act of 1986. In the new process, field commanders have a greater voice in setting operational requirements. This new approach will provide more opportunity to review military force needs in an integrated manner that will mitigate the inefficiencies and avoid the capability gaps inherent in the earlier compartmented budgeting process. The Naval Studies Board, in connection with this review of deterrence, urges the acceleration of this change in the budgeting process, believing that it will lead to more effective naval forces within the available budgets, and to forces better suited to deterrence missions, with relevant technological advances available in a shorter time, than the earlier process produced.

- **Arms control.** The naval forces should have an important role in future arms control negotiations, since naval forces' elements germane to deterrence are likely to be affected by any resulting agreements. Taking on such a role also requires advanced preparation by the naval forces to maintain credibility on the subject and to ensure that Service positions bearing the authority of Service leadership are advanced and addressed.

DECISION AIDS: INTELLIGENCE, GAMES, MODELING, AND SIMULATION

The key decision aids for an effective deterrence strategy are accurate information about and understanding of a particular situation, the context, and the issues and the participants in any events of concern, as well as understanding of the relative merits of various approaches to the situation based on having thought through similar situations and experimented with ideas about how to treat them.

The key elements of information—i.e., intelligence and understanding—are highlighted throughout this report. They include a thorough understanding of the issues, nations, and individuals involved in events-—including an objective view of actual or potential *opponents'* objectives, values, strengths, and weaknesses, as well as a thorough understanding of actual or potential *allies'* values, strengths, weaknesses, and motivations. We must also have a clear view of *our own* objectives, values, resolve, and capabilities to influence any situation. Included in understanding of the opposition is an accurate view of what that nation or group holds dear that can be threatened or used as an inducement to acceptable behavior in a crisis. Current intelligence must find indicators of impending actions that the United States would wish to deter, in time to allow assessment, decision, and anticipatory deterrent action.

Aside from actual experience, practice in managing situations involving deterrence can be gained through the use of models, simulations, and games involving representation of the participants in an action, including the U.S. officials who would play a part in such activities. The models, simulations, and games providing opportunities for such experimentation are legion. Most have been devised to study the interplay of forces in warfare and to evaluate military system and force performance. Those applicable to deterrence must also include qualities bearing on deterrence action, such as the capacity for decision making relevant to such action. The needed qualities are reviewed briefly in Chapter 1; some essential elements of such decision aids are examined in detail in the three papers included in Appendix G.

A review of the uses of models, simulations, and games as decision aids to deterrence suggests the conclusion that the choice of specific decision aids is not a critical decision in itself; many of the existing decision tools can be applied to good advantage. Their chief value is in requiring disciplined thinking about a problem through ordering of the problem's elements and enabling evaluation of

its critical parameters. The key criteria in selecting any tool to aid decision making, and especially models and simulations used to support games that apply to specific situations, should be the following:

- The ability to evaluate the metrics of deterrence, outlined above, in specific situations; and
- The ability to take the users out of their own frame of reference so that they can view a situation from the points of view of all the participants in the action.[7]

Except for enhancing their ability to meet these criteria, it is more important to invest in utilization of existing models, games, and simulations for learning than to expend resources in seeking their continuous improvement.

Principles to follow in selecting and applying such decision aids include the following:

- Decision aids should incorporate the capacity for decision making and for representation of values and patterns of influence among all the participants; subordinate models and simulations designed for specific purposes, such as evaluating duels between military forces, can be used to supplement decision aids that have the
- Decision aids should not be expected to foretell with confidence the outcomes of ongoing or contemplated deterrence actions, because the precise unfolding of events depends on many elements of chance and many unknowns, so that the resulting predictions could easily lead to faulty conclusions and policies.
- Decision aids should be used for training, learning, and practice.

[7] An example of the level of detail required in such a view that emerged from an actual crisis some years ago was the consideration on the part of the U.S. leadership of a plan to disrupt the telephone system of the target country, to inhibit its ability to counter U.S. deterrence actions. What was not accounted for was the fact that the country's telephone system was very unreliable and was routinely out of action for such long periods that the country's leadership had learned to function without it (anecdote from the experience of one of the participants in the study group). Another example is contained in the description of U.S. motivation and Iraqi reaction to Secretary of State James Baker's proposal to meet with Iraqi Foreign Minister Tariq Aziz in early January 1991, just before the start of the Gulf War. The U.S. intent was to show that we would make every effort to allow the Iraqis to agree to withdraw from Kuwait and thus to back away from the certainty of an undesirable war that they could only lose. The Iraqi interpretation of the proposal was that the United States had a failure of resolve, and Saddam Hussein's determination to remain in Kuwait, which had been wavering as the Desert Shield buildup continued, was reinforced (Michael R. Gordon and General Bernard E. Trainor, The Generals' War: The Inside Story of the Conflict in the Gulf, Little, Brown and Company, Boston, 1995, p. 195).

- Decision aids should be used for analysis, to help identify gaps and uncertainties in our understanding of situations and of participants in events—the analyses can be applicable to hypothetical situations, as devices for practice and learning, or to real situations, to help assess the consequences of different courses of action. In addition they should be "competitive," to help the decision makers using them to view situations from outside their own frames of reference.
- Decision aids should explicitly state for their users the levels of confidence in the information and in the representation of the values of the "players" and other characteristics on which the decision aids are based.

The value of deterrence decision aids available to U.S. decision makers can be enhanced by a number of steps. These include:

- Enhancing the ability to represent decision processes of U.S., adversary, and coalition participants, all within their own value systems and with attention to the specifics of the participants' leadership and their circumstances;
- Calibrating decision aids against real experience, to "bench mark" them and understand their strengths and weaknesses;
- Making deterrence an explicit part of ongoing gaming exercises used for diverse planning and training purposes, such as the Navy's annual "global war game" at the Naval War College and strategic war games run from time to time under Joint Staff and Service auspices, and especially games involving members of the National Command Authorities (NCA), with concentration on the activities preliminary to war rather than on the playout of war;
- Periodically undertaking political and military war games of deterrence per se, in which the beginning of warfare among the opponents represents a "loss" and the end of the game;
- Learning how other countries use models and games in situations applicable to deterrence—the issues they examine, the opponents they consider, the outcomes they seek;
- Learning about and keeping abreast of activities in the various institutes for conflict resolution supported by U.S. universities, foundations, and corporations, as a source of input for the Navy Department's models, simulations, and games relevant to deterrence; and

- Incorporating post-Cold War deterrence explicitly into Naval War College curricula, to gain the benefit of the students' thinking and theses on the subject and to heighten students' awareness of the special problems associated with deterrence to help them in their future assignments. This step must include conveying a sense of judgment regarding the circumstances that affect the national will to undertake deterrent actions that may entail significant human, economic, and political costs. It also includes cultivation of the political skills that will be needed by naval forces' commanders in the complex deterrence situations they may face. Assignments such as National War College studies, where such matters are considered on a joint Service basis, should be encouraged.

The kinds of preparation inherent in the uses and enhancement of decision aids that are described above should strongly reinforce the ability of the U.S. Navy and Marine Corps to contribute to U.S. deterrence policy and strategy. Just as the evolution of Cold War deterrence strategy took place as events unfolded and analysts and policy makers both anticipated and reviewed them over a long period of years, so also will the appropriate application of available decision aids contribute to the development of deterrence policy and strategy in the current post-Cold War period.

APPENDIX A

Revising the Practice of Deterrence

John D. Steinbruner, Brookings Institution

The concept of deterrence is a product of the Cold War. Though the underlying principles can be detected in the military writings of all historical periods, the word itself and the elaborate conceptualization that accompanies it have been developed over the past 50 years in the course of establishing a rationale for the deployment of nuclear weapons.[1] The familiar central doctrine holds that nuclear weapons are maintained to prevent their use and, by extension, any large-scale form of warfare by threatening retaliation destructive enough to override any rational motive for aggression.

This concept rests on a theory of human behavior. Assuming that the primary danger is that of a war arising from deliberate calculation, the theory posits that a countervailing threat displayed with sufficient probability and sufficient destructive potential can dominate any aggressive calculation that might be made, no matter how perverse or myopic it might be. It is apparent from the historical record that this theory did not inspire the creation of nuclear weapons in the first place, nor did it very directly determine the size or composition of the deployments that occurred. Nonetheless it is arguably as consequential as any theory of human behavior has ever been. The single word "deterrence" has been widely accepted as a summary statement of the most fundamental national security objective and indeed as the central pillar of foreign policy. Within the United States, it is perhaps the most solidly established element of political consensus—the least disputed function that the increasingly beleaguered national government performs. Moreover, within the military establishments that deploy nuclear weapons, the conceptual elaboration of deterrence provides the main guidelines for practical decisions on the size and composition of forces and for the daily management of their operations.

The entrenched practice of deterrence has survived the declared ending of the Cold War essentially unaltered —a fact that is hardly surprising given the critical organizing functions that the concept has come to perform. The rhetoric of confrontation that originally accompanied the doctrine has been replaced with more polite forms of political discourse, and overall nuclear weapons deployments are being reduced to less than one-quarter of their peak levels. Nevertheless the main forces still continuously preserve the ability to initiate deterrent retaliation within 30 minutes—the nominal intercontinental flight time of a ballistic missile. And even with their scheduled reductions fully

[1] The history of the concept is briefly reviewed in Alexander L. George and Richard Smoke, Deterrence in American Foreign Policy: Theory and Practice, Columbia University Press, New York, 1974.

accomplished, the residual capabilities of the United States and Russia will be virtually as lethal to each other as they were at the height of mutual antagonism. In terms of political consensus and institutionalized procedure, neither establishment knows how to do it in any other way.

Understandable as this situation may be, it cannot be continued indefinitely. The entire context of international security is being radically altered, and the emerging problems require different organizing principles. Moreover, all along there have been underlying dangers whose importance was obscured by the ideology of the Cold War. It is not responsible to tolerate those dangers in the new context. The prevailing practice of deterrence will have to be substantially revised. The sooner this is appreciated and the more systematically it is accomplished, the better off we all will be.

CHANGING CONTEXT

There is as yet no agreed formulation or summarizing imagery to characterize the period of history that is to follow the Cold War, but already it should be evident that it will involve a major transformation of international relationships.[2] A globally extended economy is forming, driven by a revolution in information technology. The scale of this extended economy will have to undergo an unprecedented expansion as the world population surges over the next five decades. The effects associated with these two phenomena can be expected to generate extensive changes within most societies and will certainly alter their interactions.

The revolution in information technology is already a familiar event in terms of its effects on consumer products and thereby on daily life. Over the past two decades the inherent costs of performing the basic functions of storing, processing, and long-range transmission of information have undergone precipitous declines. Though agreed measures of these cost declines have not been fully established, they clearly amount to several orders of magnitude—factors of a thousand to a million or more. That appears to be the largest efficiency gain of any commodity in economic history. Highly facilitated information flows are enabling the production of goods and services to be conducted on a global scale and the market forces derived from that fact are spontaneously inducing an integrated international economy. This process is also diffusing technology and basic cultural information so extensively that the entire pattern of social organization seems likely to be affected.

At the same time we are encountering an unprecedented surge of the world population—the rapid rise associated with an exponential growth sequence before it reaches some natural or induced limit. Barring a cataclysm, the world population will increase by roughly 1 billion people per decade over the next three decades and will exceed 8 billion by 2025. The trend thereafter is not yet

[2] Steinbruner, John. 1994. "The Problems of Strategic Realignment," paper prepared for the 1994 meeting of the Atlantic Conference of the Chicago Council on Foreign Relations.

determined, but a trajectory that reaches 10 billion by 2050 is a plausible possibility. More than 95 percent of whatever increase occurs will come in the poorest communities. The absolute magnitude and the distribution of this surge is a combination without precedent in human history and will clearly give tremendous impulse to the internationalizing economy.

As an obvious consequence of this impulse, economic performance is likely to become the principal determinant of national viability and therefore the central objective of policy for all governments. Moreover, performance will necessarily be defined not only in terms of overall growth but also in terms of distribution. Unless the globalizing economy successfully extends its reach to those people in the lower economic strata, where the population surge is occurring, the coherence of many if not all political systems is likely to be in question and some would almost certainly be torn apart. It is difficult to imagine a successfully operating international economy of 10 billion people, 6 billion of whom live under conditions of endemic austerity and another 2 billion who experience continuously declining standards of living. The amount of violence generated in an integrated economy of that sort would presumably be massive, more than the prosperous 2 billion could reasonably expect to contain by coercive means.

The expansion of economic participation required to assure a favorable trend in economic equity—that is, an absolute and relative improvement in the standards of living of the poorest population segments—implies that the global economic product will have to increase by a factor of five or more, including a probable tripling of energy and agricultural production. Were that to be attempted on the basis of current technologies even taking their natural evolution into account, the environmental consequences would probably be severe enough to preclude the economic growth objectives, at least in some of the more burdened regions of the world. That implies that massive investment programs will have to be undertaken to alter the core production and consumption patterns on a schedule commensurate with the population surge, a process that would entail large structural and technical shifts within virtually all national economies. It also implies an increasing sensitivity to the balances of material flows and to their environmental effects, a development likely to be of decisive importance in the more burdened regions and potentially so on a global scale as well.

As these implications emerge, there will also undoubtedly be a diffusion of political power. National governments struggling to assure economic performance will not have autonomous means to do so. Information technology is enabling, probably in fact compelling, the decentralization of many decision processes, thereby eroding the degree of control that national governments are able to exercise within their societies. It is simultaneously driving the global extension of basic economic activities, thereby dispersing control into the international economy as a whole. The predictable longer-term effect of this pattern is to drive national governments into more consequential collaboration.

That in general will be the only realistic means of extending their effective authority.

STRATEGIC IMPLICATIONS

It is possible to project conceptions of political intention that appear to justify the continuation of Cold War deterrent practices in this emerging situation. The conceivable reversion to authoritarian government and to expansionist policies in Russia is being advanced in official documents as a major reason for the preservation of U.S. deterrent forces.[3] Informally there are more venturesome variants. One can observe, for example, that China and India together encompass one-half of the world population and that both are poised for rapid economic growth, as is Indonesia. If one assumes that national identity can somehow override the globalizing trend and that these powers will join Japan on the frontiers of technology, then one can posit the emergence of an Asian power center or alternatively a major confrontation centered in Asia.

It is worth noticing, however, that none of the countries in question is yet making the extensive investments required to develop classic military power projection capabilities on a global or even a regional scale. In fact the United States is currently the only country sustaining investments of that magnitude, and there are strong reasons why others would not attempt to match what we have done. Those reasons have to do with the deeper implications of the transformation that is in progress.

Perhaps the central fact is that deliberately calculated, large-scale aggression—the central focus of deterrent policy—is simply not a major temptation for a major government. The classic exercise of seizing territory by force is not worth the risk and expense involved, save for a few marginal situations. With the advanced capabilities of the United States and its major allies, those exercises can in principle be detected and preemptively defeated, and even an initial success could not be sustained. Basically the assertion of political jurisdiction by illegitimate force is ruinously inefficient in the globalizing economy. The variant of attempting political intimidation by threatening long-range destruction is such a blunt instrument and is so exposed to countervailing threat that it is not a credible policy for a major government. As long as the source of aggressive intent can be located and identified, the basic deterrent effect is not worth contesting and is therefore relatively easy to achieve.

The more serious security danger, moreover, is that emerging from spontaneous social violence and from small-scale but highly destructive threats whose originating source cannot be readily located or identified. The globalizing economy is making access to destructive technology inherently available, as dramatized but only indirectly illustrated by terrorist episodes in

[3] Department of Defense, Office of the Secretary of Defense, Nuclear Posture Review briefing, Washington, D.C., September 22, 1994.

Tokyo and in Oklahoma City. Small states and substate organizations can acquire weapons of mass destruction and sophisticated means of delivery. The proliferation of highly destructive clandestine threats of this sort could reach unmanageable proportions. So also could the instances of radical internal disintegration such as have occurred in Bosnia, Somalia, Rwanda, Tajikistan, and many other places as well. At the moment, the leading military establishments are poorly prepared to handle this array of problems, and traditional deterrent practices interfere with the intricate collaboration among them that would be required to develop relevant capabilities.

RUSSIAN CASE

The problem of adjusting traditional security commitments to fit the new circumstances clearly weighs most heavily on the Russian military establishment.[4] Russia, it is important to note, has been the principal victim of the Cold War. For 50 years as the core element of the Soviet Union, it sustained an effort to develop a competitive military establishment in confrontation against all of the major industrial economies. The cost in terms of economic opportunity was tremendous. In the aftermath of that period, Russia has inherited an oversized and unbalanced remnant of the Soviet military establishment poorly suited for its new political and territorial configuration. It faces the problem of relocating and redesigning this inherited establishment while simultaneously undergoing a massive regeneration of its economy, its political system, and indeed its entire society.

In responding to the problem, the Russian military planning system is attempting to preserve a military establishment of more than 1.5 million people. This is the minimum deemed necessary to preserve core nuclear deterrence, to protect against an imaginable conventional ground attack in the Far East and tactical air assaults from the West, and also to cope with flaring episodes of civil violence along their southern border. Though these images of potential threat may appear unlikely to the rest of the world, in the traditional logic of military planning they are at least as plausible as the ones the United States currently uses to set standards for its military deployments. So are the force structure conclusions derived from them.

Those conclusions, however, are wildly unrealistic in economic terms. Russia would have to spend nearly $100 billion per year to sustain a 1.5 million-person establishment even if it could produce comparable equipment at half the cost the United States experiences. As prices in the Russian economy adjust to world standards, the full financial requirements of the planned military establishment would exceed $200 billion. The officially enacted defense budget of 40 trillion rubles, nominally comparable to $20 billion at the time it was approved, undoubtedly understates the resources that the Russian defense effort

[4] Steinbruner, John. 1995. "Reluctant Strategic Realignment: The Need for a New View of National Security," The Brookings Review (Winter 1995).

actually extracts from the economy. But whatever the true amount is, it almost certainly falls well below the minimum sustaining requirement.

There is very little practical prospect that the defense budget will be expanded to meet this requirement. The attempt to do so would threaten the more vital process of economic regeneration and would require a degree of coercive political recentralization that probably has become infeasible but at any rate would be self-defeating. The international reaction to that development would drive the burdens of military preparation to yet more unrealistic levels.

If indefinitely continued, underfinancing of the Russian military establishment will assuredly cause its internal deterioration, and a series of very grave consequences could readily result—the loss of control over large weapons inventories and a destructive interaction with the process of political reform foremost among them. The disintegration of Yugoslavia has provided a chilling hint of what could happen. If that large set of risks is to be avoided, the Russian establishment will probably have to be cut to a level substantially below the current planning aspiration in order to preserve its internal coherence. That in turn requires some very systematic international arrangements to provide reassurance. A coherently planned reduction will not be undertaken if those who are doing it believe the consequence is indefinite exposure to unmanageable external threat.

THE SUBORDINATION AND REVISION OF DETERRENCE

In fact it seems likely that reassurance will eventually emerge as the central security objective of the new era. It is the natural guideline for international security relationships not only between the United States and Russia but also more generally. If no major government is straining to commit aggression or to practice intimidation, then all share a common interest in protecting against these traditional threats as efficiently as possible. To the extent that they can reassure each other in that regard, force deployments, alert levels, and defense budgets can be reduced. Much of the expense and the inherent danger of Cold War forces has been driven by the perceived need to prepare for war on short notice. Beyond that the exercise of reassurance would establish the foundation for close cooperation in responding to instances of spontaneous violence and the potential proliferation of clandestine threats.

At the outset, at any rate, an international security arrangement based on systematic reassurance would necessarily subordinate but presumably not eliminate the practice of deterrence. The legitimacy of preserving a residual deterrent capability would be accepted, but the primary commitment would be to reassuring measures designed to provide convincing indication that nuclear force operations were being restricted to that single legitimate purpose. Abstract as that principle may seem at first glance, its full implementation would involve extensive, indeed revolutionary, changes in prevailing operational practice. Specifically, it would terminate continuous alert operations; it would impose

international standards of accounting and physical security on weapons and fissionable materials inventories; and it would formulate agreed restrictions on operational doctrine. The main purpose of all three measures is to set higher standards of operational safety designed to be reassuring both to those being deterred and to those being protected.

Alert Practices

The termination of alert operations would be the most consequential of these measures. As noted, the preparations for rapid retaliation that were developed during the Cold War continue in the aftermath. The number of nuclear weapons currently being maintained on alert status is sufficient to execute a coordinated plan designed to do decisive damage to opposing military forces and their supporting industrial structure. With any serious indication of increased tension, current strategic forces are in the habit of adding additional weapons to their alert forces so as to increase the scale of attack they are immediately prepared to undertake. This operational pattern was developed in order to be sure beyond any practical doubt that a deviously calculated, skillfully concealed attack would not meaningfully degrade the capacity for retaliation. Implicit in the practice is the commitment to respond so quickly that retaliation would be effectively initiated before the initial attack had been completed.[5]

These alert practices have been accompanied by elaborate physical and procedural measures designed to prevent accidents and unauthorized actions, and they have been fundamentally successful in that regard. [6] There has been no hostile or unintended explosion of a nuclear weapon since 1945. The record is replete with incidents that warn of the inherent danger, however, and there are particularly strong reasons for worrying about crisis conditions. The ostensibly good safety record applies primarily to routine peacetime circumstances. The few occasions when nuclear weapons were maneuvered in response to crisis circumstances have produced some unsettling episodes.[7] The infrequency of crisis experience is merciful, but it means that there has been little opportunity for the discovery and correction of managerial errors under the conditions when they are most likely to occur. It also means that the empirical base provided by historical experience is not adequate to derive a comprehensive measure of safety. In particular there is reason to believe that the Cold War procedures

[5] Blair, Bruce G. 1993. *The Logic of Inadvertent Nuclear War,* Brookings Institution, Washington, D.C.

[6] Carter, Ashton B., John D. Steinbruner, and Charles A. Zraket, eds. 1987. Managing Nuclear Operations, Brookings Institution, Washington D.C.

[7] Sagan, Scott. 1993. The Limits of Safety: Organizations, Accidents, and Nuclear Weapons, Princeton University Press, Princeton N.J.

involve a meaningful risk of an inadvertent war arising out of the interaction of opposing alert procedures.[8]

In the new strategic situation, there is no reason to accept this risk. In principle, the legitimate deterrent effect can be preserved, essentially undiminished, with much higher standards of safety if physical and procedural measures are introduced to assure that no weapon is immediately available for use and that the process of preparing a weapon for use would reliably provide international warning that it is occurring. The most direct way of accomplishing that is to separate warheads from delivery vehicles or to otherwise configure the operating systems short of full readiness with international monitoring procedures to verify that condition. To do this in a manner that did not open up any good possibility for an effectively concealed initial attack would involve some substantial problems of technical design and would require systematic collaboration among all of the countries deploying nuclear weapons. At least in technical terms, however, there is no reason to believe that standard would be more difficult to achieve than the current rapid reaction posture. Deactivating nuclear weapons is a major part of the agenda for reassurance.

The Accounting for and Physical Security of Fissionable Materials

A supplementary part of the agenda concerns the accounting for and physical security of fissionable materials.[9] In aggregate, the five states that explicitly developed nuclear weapons during the course of the Cold War produced hundreds of metric tons of plutonium and highly enriched uranium and fabricated nearly 100,000 nuclear weapons out of this material. Very exacting standards of accounting and physical protection were developed for the weapons themselves, but the same standards were not extended to the byproducts of the effort. Moreover, no provisions were made for disposition of the fissionable material other than incorporating it in weapons or holding it in reserve for that purpose. The critical isotopes will be suitable for weapons application for spans of time ranging from tens of thousands of years to hundreds of millions of years, and their radioactive decay products will be a severe health hazard for those durations. Ultimately some acceptable method of disposition will have to be devised. This material cannot be deployed as weapons or stored in its current sites for as long as it will remain dangerous.

The issue of ultimate disposition is being immediately posed by the release of weapons-grade material from active inventories in the course of implementing the arms control agreements that have recently been concluded by

[8] Blair, Bruce G. 1995. "Global Zero Alert," Brookings Occasional Papers, Brookings Institution, Washington, D.C., May.

[9] Carnegie Commission on Preventing Deadly Conflict. 1995. "Comprehensive Disclosure of Fissionable Materials: A Suggested Initiative," Discussion Paper, Carnegie Corporation of New York, April. Also, Committee on International Security and Arms Control of the National Academy of Sciences. 1994. Management and Disposition of Excess Weapons Plutonium, National Academy Press, Washington, D.C.

the United States and Russia. The two countries will release approximately 100 metric tons of plutonium along with more than 600 metric tons of highly enriched uranium as they carry out the provisions of the START I and START II agreements. The uranium can be readily diluted to lower enrichment levels and stored indefinitely without radiological hazard. If it is eventually burned in commercial reactors, it will nonetheless contribute to the further accumulation of plutonium. For plutonium itself, at least in the United States, there is no agreed method of disposition other than holding it in guarded storage. It currently appears likely that the effort to begin the process of disposition will consume a decade or more, and completion of the process is likely to require several decades after it has been initiated.

In the course of attempting to solve that immediate problem, it can be expected that a broader issue will be recognized. More than 1,000 metric tons of plutonium have been produced throughout the world as a by-product of nuclear power generation, with approximately 100 tons of it held in separated form in several different locations. Though this material is of different isotopic composition than the plutonium produced for weapons application, it can be fabricated into nuclear explosives and is virtually as dangerous from that point of view. Under the provisions of the Non-Proliferation Treaty, most of this material is subject to International Atomic Energy Agency safeguards, which are in effect a set of international auditing arrangements overlaid on national accounting systems. Even under the most generous estimate of their effectiveness, it is apparent that plutonium generated in commercial reactors is not subjected to the same managerial standards as weapons-grade material, particularly not the same standards of physical security.

It is prudent to assume that this situation cannot be continued indefinitely without eventually producing a serious breach of control or an actual explosive catastrophe. It is a by-product of the Cold War practice of deterrence that will surely have to be refined under the imperatives of the new era. In order to establish more robust protection against the unmanageable profusion of clandestine threats, the nuclear weapons establishments will have to set more exacting and more comprehensive standards for the accounting and physical protection of fissionable materials. The key to that is making the status of these materials continuously transparent to the international community as a whole— a major revision of traditional practice.

Restraints on Operational Doctrine

The deactivation of deployed weapons and the control of fissionable materials are measures that are directed, as it were, to the hardware of deterrence policy. Under Cold War practice, arms control measures designed to stabilize the interaction of deterrent forces relied primarily on hardware constraints-the number of weapons to be deployed, the number of warheads they could carry, the number of tests allowed, the physical parameters of testing, and such things. These were matters that admitted to exact definition and

independent verification. In the adversarial bargaining process of the era, they emerged naturally as the focus of control.

If the practice of deterrence is subordinated to the broader objective of reassurance, then additional measures having to do with the "software" of deterrence practice become both feasible and desirable. Among the more important of these would be restrictions on operational doctrine.

The Cold War practice of deterrence was bedeviled by some serious tensions involving the doctrine of force operations. The entire concept of deterrence required, in principle, a strict policy of retaliation; but, as a practical matter, if a nuclear war even appeared imminent, there were powerful incentives to initiate it. Largely because it was so difficult to protect command systems from a dedicated assault, a force able to initiate a coordinated attack might fare substantially better than the one slavishly adhering to the rule of retaliation. That realization drove the two principal establishments into their rapid reaction postures and created the possibility that one side in the heat of intense crisis might misjudge the actual imminence of war and might initiate what it considered to be a protective preemptive attack.

In terms of the underlying theory of calculated behavior, this hair-trigger situation did not seem to be unacceptably dangerous. Indeed it could be used to solve another doctrinal dilemma—the fact that the massive threats used in advance of war to present an overwhelmingly stark deterrent threat would be irrational if war were actually to occur. Lest a truly cold-blooded aggressor count on that anomaly to prevent retaliation, the hair-trigger preparations introduced an element of chance that would preserve the deterrent effect. If one considers the fact, however, that no large organization can be absolutely controlled by central calculation, particularly not one whose central authority is inherently vulnerable to preemptive destruction, then the element of chance becomes a danger rather than a comfort.

In order to remove the underlying risk of mistaken or inadvertent preemption, it would be necessary to remove the doctrinal commitment to rapid reaction, and that would be desirable, perhaps also necessary, even if deactivation had been achieved. It would clearly not be wise to set up a situation in which the major forces were programmed to move from a normal state of deactivation directly to one of rapid reaction. To prevent that, some important doctrinal limitations would have to be set—most notably, no targeting of command systems and no completed authorization for retaliation in response to tactical warning. Those measures of reassurance would segregate the deterrent effect from its more dangerous by-products.

During the course of the Cold War, doctrinal limitations of this sort were summarily rejected on grounds that they could not be verified with absolute certainty by independent means. That standard of verification with its presumption of an intent to cheat promoted the confrontational atmosphere of the era and precluded a number of prudent safety measures that would have been highly desirable even if they could not be verified with absolute confidence. If the possibility of cooperative verification is admitted on behalf of

the general objective of reassurance, then some very useful mutual constraints on force operations can be introduced with reasonable assurance. Tactical warning can and should be made a collaborative venture. If there were a desire to do so, arrangements could be devised to give controlled access to targeting plans without revealing their full details. If the normal pattern of force operations is made transparent, then nefarious alternatives that might be secreted away are forced to carry the considerable burden of detachment. If military forces are precluded from training for an operation, there is reasonable assurance that they will not attempt to do it.

CONCLUDING PERSPECTIVE

There are two simple conclusions that emerge from this assessment. If the practice of deterrence is liberation from the belligerent political attitudes that originally inspired it, then it can be made a good deal safer than it has historically been. The process of making this adjustment, moreover, is one of the things that must be done in responding to the security imperatives of the emerging era. The determining fact is that any identifiable actor can be readily deterred. It is the impersonal processes and the actors that cannot be identified that we most need to worry about.

APPENDIX B

Contemporary Strategic Deterrence and Precision-Guided Munitions

Paul H. Nitze and J.H. McCall, Johns Hopkins University

Two major developments in the post-Cold War era profoundly alter the objectives and potential effectiveness of contemporary U.S. deterrence efforts. The first is the obvious change in the international political and security environment and with it change in the goals of deterrence. With the dissolution of the Soviet Union, the direct threat of nuclear attack upon the United States has subsided. U.S. policy makers and strategic planners no longer face a specific nuclear threat, or even a general threat of war from one adversary. Instead, they find themselves confronted with an extremely complex international situation without clear adversaries, where regional aggression not necessarily directed against the United States or its interests has proven more likely than it has been at any time since before World War II. It is also an environment in which it is more important than ever that the United States attempt to define its national interests, its foreign policy goals, and its security strategy.

The second development is the evolution of the potential tools of deterrence. In the past decade, culminating with the Persian Gulf War and the deployment of stealth weapons, families of precision-guided munitions (PGMs), and the means to deliver them, have matured to a level of capability, sophistication, and reliability that permits us to use them in more than limited operational roles. The United States now possesses conventional weapons that can shoulder strategic missions—that is, missions engaging targets at the heart of the military, economic, and political power of an adversary—once thought the preserve of nuclear weapons. Because of the changes in our goals and in our weapons, it is appropriate that the United States recast its approach to strategic deterrence to meet new challenges and to take advantage of new capabilities.

WHAT IS DETERRENCE? WHY AND HOW?

To understand our options and possible new approaches to strategic deterrence, we should start by defining what we mean by the term. Although it may sound trite to remind ourselves, it is helpful to restate again that, in its simplest form, to deter means to inhibit or prevent someone from doing something. The definition implies specificity: We should know whom we are deterring from doing what, to whom, and when. From these considerations arises the notion of a broader process or act—deterrence—which we propose to translate into policy, whereby a specific government or state seeks to deter another from pursuing a specific policy goal. More commonly, we think of

strategic deterrence as our will and ability to wield military power to prevent or inhibit the use of force by another state in a manner of which we disapprove.

Successful deterrence lies with careful and precise application of such a policy. In practice, deterrence is an element of a specific security strategy, and such strategy does not evolve in isolation. There is a logic, or a series of steps based on a broad policy objective, that we follow to arrive at a strategy. To reason out and implement deterrence in foreign policy, we identify whom we want to deter from doing something, how we want to deter them, under what circumstances, and by what means we plan to deter them. Thereafter we must decide how we obtain those means. More simply, we have to know which states we want to deter from doing what—and we have to decide what we need to do so and how to get it.

To deter specific cases of aggression, the best deterrent is possession of superior military fighting capabilities coupled with well-thought-through "use" and "declaratory" doctrines. However, it is also essential, although often overlooked, that the target government and leadership we wish to deter respond to the logic of deterrence—that they recognize, understand, and react to our efforts to inhibit their actions as we would have them do. Such behavior requires a similar logical thought process to our own, an assumption not always justified.

Much of the Cold War discussion about deterrence has muddled our understanding of the concept. We should guard against a general notion of deterrence as an end in itself rather than as a tool, a means to an end. Many writers, and even policy makers, attempted to treat deterrence as an abstract. In the Cold War years, these efforts aimed at creating a general theory and policy of deterrence, with an associated clutch of models one might apply to help understand and address unfolding challenges to the United States. The unique security challenges to the United States during the Cold War helped engender this search for a general theory. It was a bipolar world, and to deter war meant inhibiting the Soviet Union from using force to further its foreign policy goals. Furthermore, since we could assume that any use of force between the superpowers would lead to escalation into eventual nuclear war, debate centered on coupling nuclear and conventional arms deterrence as the key to prevent general war. Ultimately, these Cold War efforts toward "general" deterrence against all types of aggression failed, although the idea has resurfaced more recently.

COLD WAR DETERRENCE AND THE LIMITS OF NUCLEAR WEAPONS

During the Cold War, U.S. foreign policy and security strategy flowed from the threat of the Soviet Union and the ultimate threat of nuclear war. We designed and implemented a national security strategy centered on containing further Soviet expansion and deterring Soviet use of force toward achieving their foreign policy ends. Although we sought to reduce the risk of nuclear war,

we were prepared to use nuclear weapons as part of that containment. We built a huge and diverse nuclear arsenal to that purpose.

The primary mission of U.S. strategic nuclear weapons reflected this principal focus of deterrence. U.S. strategy called for deploying a large number of nuclear weapons targeted against Soviet nuclear weapons and other military targets. With the existing technology, the best weapon against a nuclear weapon was another nuclear weapon and to ensure a reliable and credible nuclear deterrent the United States fielded parallel land-, sea-, and air-based nuclear forces all with varying types of weapons both strategic and tactical.

With the enormous destructive capability of nuclear weapons, many theorists and policy makers tended to treat them as the catch-all deterrent against any and all aggression. This was certainly the case in the early nuclear era, when contemporary attitudes allowed some to see atomic bombs as simply another weapon. However, in practice we rapidly learned that nuclear weapons can provide no such absolute security. Because we were unwilling to unleash nuclear weapons in small conflicts, they added little to our practical ability to deter petty aggressors. We also discovered that the "finesse" of nuclear security depended in part upon our ability to control those small conflicts, preventing regional disturbances from escalating into nuclear confrontations between their sponsors. In response, the United States attempted to construct another layer of deterrence based on conventional capabilities designed not only to deter or deal with Soviet incursions but those of its surrogates. The ensuing bipolar stability, based upon mutual deterrence and the effort to impose political and military limits on small conflicts, lasted throughout the remainder of the Cold War.

The lessons of the limited military utility of nuclear weapons in the Cold War era should be frankly acknowledged. We will never be certain what has deterred the use of nuclear weapons since 1945. It is possible, even probable, that the strategic nuclear arsenals in their morbid way did stay the use of these weapons, i.e., that mutually assured destruction helped prevent the use of nuclear weapons against other nuclear powers. At the same time, using nuclear weapons was never entirely ruled out, and much of the debate of nuclear strategy during the Cold War reflected this reality. In some circles there was discussion, and even advocacy, of the American use of nuclear weapons in Korea and elsewhere. Furthermore, revelations of Warsaw Pact plans regarding the first hours of any invasion of Western Europe are said to have included the use of tactical nuclear weapons against conventional troops and civilian targets. Surely these are not indicative of a complete aversion to employing nuclear weapons in combat, in a limited nuclear exchange. Military planners believed that escalation might be controlled and that limited use of nuclear weapons was possible and might stay limited.

What inhibited the American use of nuclear weapons was clearly our sensitivity to the moral and political implications of the weapons and their destructiveness. Use of nuclear weapons in a regional crisis was never really an option for the United States-despite talk of it. Some troublesome governments have known this and exploited it as a weakness in U.S. military posture.

Although the McNamara-era decision to move away from a nuclear trip wire toward flexible response led to a more credible U.S. military presence and deterrence against a Soviet threat, it did not necessarily improve our strategic deterrent options elsewhere against rogue states. We were left with a massive investment in a nuclear arsenal of limited use except in possibly deterring a nuclear attack by the Soviet Union directly against the United States. It was a one-use strategic deterrent.

POST-COLD WAR STRATEGIC DETERRENCE AND THE PERSIAN GULF WAR

After the Cold War, an undeclared "general" approach to deterrence returned to American security policy in a new guise. During the Bush administration years, conventional wisdom held that aggression previously subsumed or neutralized in superpower rivalry might now be addressed by the combination of a functioning U.N. Security Council able to act upon, and a United States determined to combat, aggression. In this new era, an emerging U.S.-Soviet cooperation would reduce or remove superpower-sponsored aggression. Furthermore, removing the fear of escalation between the superpowers might allow the United States to act more freely in response to aggression when it did occur, and even help deter some international conflicts. In a sense, the United States was in a position to enforce a peace where and when it chose.

The Gulf War was the first test of an emerging "general" deterrence and revealed some weaknesses in it—although probably because of shortsightedness on the part of Saddam Hussein. Some of the initial inability to deter Iraq's invasion of Kuwait may well have been ill-communicated policy—that is, the vocal, or declared, determination that the United States would not tolerate aggression in the region. However, even after the United States made clear that it would not let Iraq's action stand, Saddam Hussein did not back down, despite the growing, though never complete, certainty that the United States fully intended to carry through with restoring Kuwaiti independence. It appears that Iraq discounted the resolve and credibility of the United States to follow through on its threat to act or its ability to use its military capabilities. It may also be true that Saddam Hussein was unresponsive to the "logic" of deterrence, in which case he was "undeterrable." In any case, the existence of strategic nuclear missiles, as part of the looming, if dimly understood, American deterrence, appeared once again to have had limited value in deterring conventional aggression either in the invasion itself or the subsequent conduct of operations during the war.

Although the U.S. nuclear arsenal did not inhibit Saddam Hussein from invading and annexing Kuwait, some observers hoped that massive allied superiority in all strategic weapons, particularly nuclear ones, would deter Iraqi Scud attacks on Israel or their use of chemical weapons generally. The prevailing fear of the time was that, if attacked, Israel might enter the conflict

and in doing so, break up the new and delicate association of Arab powers arrayed with Western powers against a fellow Arab state. Such a disruption would have handicapped coalition efforts to stop Iraq, let alone restore Kuwaiti independence. To preserve an element of deterrence against these possibilities, the Bush administration carefully neither ruled in nor ruled out the use of nuclear weapons in the war, particularly in response to Iraqi threats of chemical warfare. At the same time, it was clear, although unspoken, that the administration would probably not equate conventionally armed Scud missile attacks with nuclear weapons.

Despite the array of weaponry, and the calculated uncertainty over coalition willingness to use nuclear weapons, an undeterred Iraq did launch Scuds against Israel. It seems that, in choosing to attack, it made little difference to Saddam Hussein whether the coalition could strike Iraq with nuclear strategic weapons or conventional weapons. In Saddam's mind apparently, the chance of embroiling Israel in the war was worth these risks, or perhaps he did not care. American use of nuclear weapons was politically improbable, and Iraq could expect the United States to deploy strategic conventional weapons in a range of missions in any case. In short, Saddam Hussein perceived no added risk for Iraq in attacking Israel and launched what missiles he could.

As it turned out, Iraq's offensive strategic weapons proved of little value. The Scud strikes against Israel did not provoke an Israeli military response and served no purpose, although the Israelis were sorely tested and were restrained only with the greatest effort on the part of the Bush administration. The coalition war effort went on unimpaired, settling into a one-sided exchange of strategic conventional strikes in which Iraq experienced the full destructive effects of smart conventional strategic weapons hitting targets at will throughout the depth of the country, followed by a ground war to physically remove Iraqi forces from Kuwait. The question remains, however: If Saddam Hussein had had nuclear weapons, would his influence on allied political and military decisions have been greater and more troubling, complicating the prosecution of the war? Would Iraqi nuclear weapons have deterred the coalition in some way?

There was no useful role for Iraqi nuclear weapons in the Gulf War. In practical military terms, it would not have been possible for Saddam Hussein to diminish significantly the overwhelming military superiority of the forces arrayed against him. Even had he developed nuclear weapons in time for use in the war, the international military might arrayed against Saddam Hussein was overpowering. It is true that a nuclear weapon in Saddam Hussein's hands might well have led to unfortunate consequences. Nuclear weapons used in desperation, or from wild plans of revenge against Israel, could have resulted in great human tragedy. Furthermore, had Saddam struck with a nuclear weapon, Israel undoubtedly would have struck back in kind, leading to untold casualties and suffering. However, the political costs were high. For Saddam to have used such a nuclear capability as he might have developed would merely have

isolated him and reinforced the determination of the coalition powers to eliminate him.

Despite the political costs, and limited military utility of an Iraqi nuclear weapon, it is not clear whether Saddam Hussein would have used nuclear weapons had he possessed them. However, it is also unclear whether the coalition's, or Israel's, nuclear threat could ever have been counted upon to deter him from using them. After all, Saddam Hussein chose to start a nuclear weapons program in the very face of the overwhelming nuclear power of the states arrayed against him, including the Israelis he sought to provoke. There was no apparent logical reason for Iraq to build a nuclear weapon outside of this very threat of irresponsible behavior: the looming threat of a wildcard regional nuclear power. Saddam Hussein's decision to embark on a nuclear weapons program itself demonstrates that there was little or no nuclear deterrent at play in Iraq's evaluation of the strategic situation in the Gulf.

Although the United States proved unable to deter the Iraqi invasion of Kuwait, the Gulf War did offer an opportunity to reinforce the future credibility of our resolve to act by making an example of Iraq's invasion for future wouldbe aggressors. The Bush administration carefully followed the U.N. path, seeking peaceful resolution of aggression before resorting to force. At the same time, it equally carefully orchestrated and led a multinational response to Iraq, culminating in a U.N.-sanctioned use of force to eject Saddam Hussein from Kuwait. In this way, the Bush administration laid the foundations for what might be a model for the response to future aggression—determined and decisive American-led multinational efforts in the United Nations and on the ground.

The Persian Gulf War also opened a further opportunity to restore credibility to U.S. deterrence efforts in the form of the PGMs it used against Iraq. The war confirmed that smart conventional strategic weapons had a practical combat mission. Against Iraq, these weapons rapidly countered and rendered essentially useless Iraq's offensive weapons and military forces—even if such offensive weapons were confined to Scud missiles with relatively limited warheads posing little threat to allied forces in the Gulf region. In the Gulf War, the United States demonstrated that it had both the resolve and the reach to strike devastating blows against the economic, military, and political power bases of an adversary without resorting to the use of nuclear weapons.

CURRENT CHALLENGES

As the Persian Gulf War demonstrated, in the current context of international relations, one without an overarching threat such as the Soviet Union and general nuclear war, the problem of deterrence is more complex than in the Cold War and its solutions must be more flexible. We must now seek to deter aggression from a variety of other states on a number of levels, while the rules of power and deterrence have altered along with the resources behind them. The already questionable ability of large powerful states to control the

actions of smaller ones has disappeared altogether. We are, therefore, less able to predict, prevent, or control the occurrence of security problems, let alone to stop them from spilling over into larger conflicts.

The spread of technology exacerbates the complexity of the diverse sources of new security problems. Not only is nuclear proliferation a headache, but a host of lethal and efficient nonnuclear technologies makes deterrence of specific threats ever more difficult to implement. Aside from missile technology, or chemical and biological weapons, detection technologies such as sophisticated radar defenses, advances in information nets, and the like make even smaller states more powerful and quicker than in the past. We can no longer construct a security strategy and policy around the belief that sheer numbers and firepower will deter aggression generally; we must create better, more specific, focused policies and strategies with better technology for the job if we hope to inhibit the aggression of rogue states.

Post-Cold War deterrence will require creating forces that can offer a credible deterrent on these new terms. Developing true strategic conventional weapons offers us the core of a flexible, credible strategic capability that no aggressor should discount in a wide range of circumstances. These weapons allow us to use them when the use of a nuclear weapon of any sort would be politically or militarily impractical. However, no mixture of forces will prevent any and all aggression or offer the preparedness we would wish. As the very occurrence of the Gulf War itself reminds us, no strategic weapon, or array of forces, can forestall the ambitions of a tyrant. New strategies and well-balanced nonstrategic conventional forces should permit the United States the ability to prevent escalation—to limit the spread of conflict—and allow us the power to redress aggression as it unfolds.

However, we must still balance the popular perception of these weapons. To much of the world viewing the Gulf War on television, PGMs appeared a miracle weapon, a new panacea for all sorts of conflicts which could do the job with little loss of military personnel and limited civilian losses. This perception caught the imagination of a people with the reasonable desire to limit human suffering and loss of life under any circumstances. Unfortunately, this is an unreasonable perception, especially at the current stage of strategic conventional weapons development. Smart weapons can do much to limit loss of life, but they cannot take on all missions, and they cannot address all emerging challenges.

We should also take special care to underscore that we should not view possession of precision-guided munitions as an alternative to our possession of nuclear weapons; we should have both. The United States should continue to maintain a secure and widely dispersed array of nuclear weapons and their delivery systems until we are assured that the nuclear weapons of others constitute no threat to the overwhelming strategic nuclear superiority of U.S. forces. However, even though it may be necessary for us to maintain an overwhelming nuclear strategic capability, it is unwise and unnecessary for us actually to use that capability, even in retaliation. The improvements in PGMs

offer us the option to respond to nuclear attack with nonnuclear weapons. If we can rely on a proven capability to disarm a nuclear aggressor with conventional strategic weapons, we should not merely retaliate, as eye for eye, or out of anger; we should act with wisdom and a sense of the great responsibility that comes with great power.

In the future, both strategic nuclear weapons and strategic conventional weapons can offer us a tailored deterrence mission. Strategic nuclear weapons may now fulfill a broader, or nonspecific, deterrence mission, poised not against another state but against the threat of nuclear attack upon the United States and its allies by a major nuclear power. Strategic conventional weapons, in the form of a variety of precision-guided munitions and the ships or planes equipped to deliver those munitions, may help create a more specific deterrence against particular emerging threats, once those threats are identified and a strategy to combat them is crafted. In a real sense, the end of the Cold War and the maturing of better conventional weapons have returned deterrence from the further reaches of abstract theory to the fold of practical policy. They encourage us to plan and declare more focused, practical, and credible deterrence policies and provide us the means with which to back them up.

In the aftermath of the Gulf War, as the lessons of the successes, failures, and potential of conventional, strategic, high-precision strategic, smart weapons are digested by all nations, one message should come home most emphatically: the United States, when provoked, can and will use strategic conventional weapons against whatever targets it considers appropriate. A general understanding of this one lesson, at home and abroad, may offer us the first credible and therefore useful strategic deterrent we have seen since the early days of the nuclear era. At the same time, the United States should not squander its credibility by allowing challenges to go unmet and forfeit international leadership in moments of crisis. Unless and until the United States is willing to closely examine its new national interests as well as publicize them, and to take the foreign policy and security measures required to meet those interests, no amount of weapons, no matter how sophisticated, will succeed in deterring aggression.

APPENDIX C

Extended Nuclear Deterrence and Coalitions for Defending Against Regional Challengers Armed with Weapons of Mass Destruction

Victor Utgoff, Institutefor Defense Analyses

INTRODUCTION

If the proliferation of weapons of mass destruction (WMD) continues, and if effective political means for restraining regional states armed with such weapons are not established, it seems inevitable that a proliferator eventually will confront the United States with a military challenge to an important overseas interest. If the interest is truly vital, the problem posed will be primarily one of planning and implementing a political-military strategy that successfully protects the interest and minimizes the prospect of WMD use.

If the interest is less than vital, the United States may be able to compromise. If it does, it will want to do so in a way that avoids encouraging further challenges. The United States will also want to avoid encouraging other states to seek their own WMD, either because they doubt that the United States would prove willing to protect them from future threats by WMD-armed states or because they judge that possession of WMD can win valuable concessions.

This paper explores some of the political-military problems likely to be posed when challenges to vital U.S. interests are made by WMD-armed regional states. In considering only the case of challenges to vital interests, the paper sets aside the question of how the U.S. sense of what is vital might change when proliferation of WMD in some region raises the risks and costs of intervening there.

To address these problems, the paper first reviews the potential for a challenge to a vital U.S. interest by a WMD-armed state. This is followed by a discussion of the general role played by U.S. nuclear weapons in deterring such challenges. Next, the paper identifies how the problem of nuclear deterrence of WMD-armed regional challengers differs from the one faced by the United States during the Cold War.

By examining some of the political and military features of a confrontation with a WMD-armed regional challenger, the paper then highlights why it would be strongly in the U.S. interest to confront the challenger with the aid and involvement of an international coalition that explicitly supports a strategy of

NOTE: The author is grateful to Barry Blechman, Robert Joseph, Karl Lowe, and Brad Roberts for their very helpful reviews of drafts of this paper. The author takes sole and personal responsibility for the opinions expressed, however.

nuclear deterrence of WMD use. The paper goes on to explore the incentives and disincentives that regional states and others could have for joining such a coalition and supporting its nuclear deterrence strategy. Finally, the paper discusses some practical steps that can be taken to speed the implementation of a coalition nuclear deterrence strategy should a WMD-backed regional challenge arise.

Further investigation of the potential features and requirements for a political-military strategy for protecting against challenges by WMD-armed regional states seems essential. It can inform and motivate advance preparations that should help to deter such challenges from being made.

POTENTIAL FOR CHALLENGES TO A VITAL U.S. REGIONAL INTEREST

It is a fundamental truism that the United States and its friends and allies benefit enormously from the world order that they have largely created with its complex economic, political, and military interdependencies. They are accordingly prepared to defend this order against military aggression threatening either the more important interdependencies or revolutionary change to the larger order itself. Some few other states are not content with their lot within this world order and are prepared to use force to better their positions when the opportunity presents itself. As current examples, North Korea, Iraq, and perhaps to a lesser extent, Iran, all oppose the current status quo within their regions. All have demonstrated a willingness to use violence to challenge the status quo. All appear to be pursuing improved WMD capabilities which can underwrite future challenges. As such states' capabilities to threaten mass destruction improve, they will expect their interests to be given more weight and will also expect to obtain concessions they had formerly been denied.

There is a logic to such expectations. Any WMD proliferator would expect every state within striking range to revise sharply upward its assessments of the losses it could suffer in a war with the proliferator. Given these increased risks, the proliferator would expect states involved in the region to evaluate more conservatively which of their interests is worth being strongly defended. Thus the task facing an aggressive regional state, newly armed with WMD, is to discover which of the interests of importance to it could be pressed successfully and to capture whatever gains are found to be available.

Deciding just how aggressively to proceed in order to capture the greatest possible concessions at reasonable risk will not be straightforward. Subtlety and patience might seem to promise substantial gains at lower risk by accommodating graceful adjustments to the new distribution of power. At the same time, a more patient approach could allow the prospective victims time to counterbalance the potential aggressor's power, perhaps by obtaining their own WMD.

Alternatively, a very aggressive pursuit of concessions could lead to an excessively risky military confrontation. This could happen if the prospective losers and their supporters saw the concession as unwarranted, or felt intolerably

offended, or judged that the concessions sought in the near term would lead sooner or later to further demands that would be unacceptable.

Finally, aggressive proliferators seeking to capitalize quickly on their newfound military power will not expect the United States and its potential allies to readily reveal which of their interests might no longer be defended. They will expect to have to probe the allies' resolve and to engage in an occasional strong test of wills. Thus, acquisition of WMD by aggressive states can be expected to lead to a process of probes and challenges, with significant risks of a confrontation in which the United States is committed to defend the interest at stake, but the challenger does not appreciate this and will not or cannot back down.

Taken together, these observations suggest that acquisition of WMD by aggressive regional proliferators will sometimes lead to intense tests of will with the status quo powers. Given the uncertain political-military dynamics of such confrontations, no one should be very confident that they will be resolved without conflict and without WMD actually being used.

NUCLEAR DETERRENCE IN CONFRONTATIONS WITH REGIONAL PROLIFERATORS

For the foreseeable future, nuclear deterrence will play an essential role in dissuading or moderating challenges to U.S. vital interests from aggressive WMD-armed regional states. The alternatives seem inadequate as substitutes.

One alternative is to seek to deter WMD initiation solely by threatening great destruction with conventional forces or by expanding the aims of the war. Unfortunately, conventional retaliation may not impress a potential WMD user sufficiently. History provides many cases of states standing up to conventional bombardment for years. It is also possible that when the opponent escalates to the use of WMD, the United States and its allies would already be doing all they can to punish and defeat the opponent with conventional forces.

Further, the United States and its allies have been scaling back their capabilities for raw conventional violence for many years. Some argue that precision-delivered conventional munitions can so rapidly and efficiently disable or destroy an opponent's high-value targets as to constitute an adequate deterrent to attack with WMD. Certainly precision-strike munitions are technically impressive and are very efficient destroyers of "Achilles' heel" vulnerabilities in an opponent's forces, industry, and infrastructure. Nonetheless, used in affordable numbers, they do not have the potential to impose the same kind of hardship on an opponent as nuclear retaliation would.

Moreover, Operation Desert Storm highlighted the importance of minimizing such vulnerabilities, and potential opponents are working hard to do so. Certainly the opponent's leaders should be able to provide themselves with shelters that cannot be attacked effectively with precision conventional munitions.

In contrast, there is no history of states standing up to nuclear punishment. Moreover, nuclear retaliation is universally and deeply feared and thus has unmatched psychological power as a deterrent. Finally, the opponent's leaders cannot be confident of surviving a nuclear attack that is focused on destroying them.

These arguments are not meant to suggest that nuclear retaliation should be the inevitable response if an opponent were to initiate WMD use and to do great damage. They do suggest that although conventional retaliation may be an adequate deterrent in some cases, its prospect has far less deterrent power than that of nuclear retaliation. Thus, it risks proving inadequate in cases where nuclear deterrence would be effective.

The second alternative to deterrence through nuclear retaliation is to depend instead upon defenses against WMD attacks that can prevent intolerable levels of damage. Three complementary paths can be taken: prevent such weapons from being launched, interdict them as they travel toward their targets, and protect the targets against WMD that arrive in their vicinities. Each path can provide useful protection, but, even if all three are pursued vigorously, reliable and complete protection from WMD attacks will be a long time in coming, at best.

To be more specific, preventing a proliferator from even launching attacks with WMD will likely remain very difficult. For example, a WMD capability consisting of dispersed and disguised mobile missile launchers, controlled from deep underground command posts, using redundant communications, seems likely to remain very difficult to neutralize, despite the best U.S. efforts.

Building WMD forces that are survivable should be possible if a state works at it. Displays of U.S. military capabilities in operations such as Desert Storm periodically teach proliferators much about what they need to protect against. Many corporations are ready to sell to anyone the technical advice, materials, and services needed to ensure that particularly important military systems are very hard to find and destroy.

Destruction of biological weapons before they can reach their targets would be particularly challenging. Because very small amounts of biological warfare (BW) agents could destroy concentrations of people across large areas, and because BW agents can be manufactured and stored in increasingly common and innocuous-appearing facilities with legitimate uses, locating them for preemptive attack can be virtually impossible. Further, the tiny amounts needed for devastating attacks can be delivered by means that are extremely difficult to detect and interdict.

Destroying nuclear and chemical weapons and their necessarily larger delivery systems while they travel toward their targets is somewhat more promising. Defenses against ballistic missiles can be far more effective than the Patriot system was against Iraq's Scud missiles during Operation Desert Storm. More generally, the United States should be able to develop active defenses that

would be able to destroy most of the larger delivery vehicles sent against them, such as manned aircraft, cruise missiles, ships, trucks, and the like.[1]

Still, building near-perfect active defenses against even the larger delivery systems is probably going to remain impractical. Thus, the United States and its allies will have to accept the possibility that at least a few such delivery systems would reach their targets.

The degree to which targets can be protected by passive means from damage by weapons of mass destruction that arrive in their vicinities depends upon the type of weapon involved. Although very deeply buried underground bunkers with multiple hidden entrances can provide substantial protection against nuclear attacks, their high cost implies they cannot be provided for all of the population, forces, and valuable facilities that could be targets for nuclear attack.

The prospects for protecting forces and populations from biological and chemical attacks that arrive in their vicinities are much better. Combinations of relatively inexpensive passive protection measures such as masks, shelters, suits, vaccines, antidotes, decontamination procedures, and warning sensors, etc., can provide very effective protection for populations and forces.[2] Still, even if losses to chemical-biological attacks could be held to a small fraction of the target populations, hundreds of thousands of people could still be killed by a large-scale attack.

In time, defenses against WMD may evolve that can limit damage to levels that, although very painful, would not be militarily or politically decisive. If so, it should become even easier to deter WMD attacks, since a proliferator should be less inclined to risk nuclear retaliation for WMD attacks that do not promise to be either militarily or politically decisive.

However, for the foreseeable future, a proliferator can probably count on being able to do great damage with weapons of mass destruction. Thus, given the inherent limitations of currently foreseeable defenses against such weapons, and the incommensurate nature of conventional deterrence, at least against nuclear attacks, nuclear deterrence of WMD use seems essential.

CHANGED ASPECTS OF NUCLEAR DETERRENCE

Nuclear deterrence of an aggressive WMD-armed regional state differs greatly from the nuclear deterrence problem that occupied the attention of the United States during the Cold War. The differences suggest that, on balance, nuclear deterrence should pose risks of a far smaller magnitude to the United States than in the past, and, to that extent, should be more credible and effective.

[1] Utgoff, Victor A. and Jonathan Wallis, Major Regional Contingencies Against States Armed with Nuclear, Biological, and Chemical Weapons: Rising Above Deterrence, P3170, Institute for Defense Analyses, Alexandria, Va., forthcoming.

[2] Lowe, Karl, Graham Pearson, and Victor Utgoff, Potential Values of a Simple BW Protective Mask, P-3077, Institute for Defense Analyses (U.S.) and Chemical & Biological Defence Establishment (U.K.), September 1995.

The differences also suggest that it will be difficult to be as well prepared, in both political and military terms, to implement a nuclear deterrence strategy as it has been in the past.

First, so long as the United States maintains anywhere near its current military superiority, none of the more plausible WMD proliferators has a significant chance of defeating the United States in a strictly conventional conflict over a vital issue. This is markedly different from when NATO faced an apparently overwhelming conventional threat from the Warsaw Pact.

During those years, NATO expected to be able to defend conventionally for only a few days. After that, its plans called for initiating nuclear warfare to demonstrate its will to destroy the Warsaw Pact rather than submit. Given the dangers posed by the size and reach of the Soviet Union's nuclear forces, the foreseen horror of nuclear war, and the questionable morality of initiating a type of war that might have destroyed the world, many wondered whether the United States would honor its promise to initiate nuclear warfare.

Now the shoe would be on the other foot. If escalation of a regional war to mass destruction is to be threatened or done, it is the new proliferator that would have to do it. Any state that initiated mass destruction should expect that it would have made itself "fair game" for U.S. nuclear retaliation. Further, the horror with which Americans view nuclear, biological, and chemical warfare seems likely to magnify the offense represented by any use the opponent made of such weapons. Moreover, in contrast to making first use of nuclear weapons, the morality of U.S. nuclear retaliation is likely to appear very clear.

Second, although the balance between U.S. and Soviet nuclear forces was sometimes hotly debated during the Cold War, U.S. nuclear capabilities are, and will remain, vastly superior to the WMD capabilities of any new proliferator. This is much more than a matter of the far larger numbers of warheads available to the United States. U.S. capabilities to locate, identify, and track important targets, to reach targets wherever they are located, to overcome the opponent's active and passive defenses, to employ whatever nuclear yields seem needed, to deliver weapons to targets accurately, and to destroy these targets quickly are not going to be matched by any new proliferator for the foreseeable future. This remains true despite the dramatic reductions in the size and readiness of U.S. nuclear deterrent forces. Thus, if a new proliferator forces a conflict with the United States to the nuclear level, it will be at an even greater disadvantage than when fighting the United States at the conventional level.

Third, though painful to contemplate, the United States can survive the kinds of WMD attacks that could be made by any new proliferator. Such states' abilities to deliver relatively heavy nuclear and chemical payloads over intercontinental ranges will be very limited for many years. Moreover, as noted above, relatively cheap civil defense measures can keep the potential destruction from biological attacks well below the levels at which the survival of the United States or of any other nation would be brought into question. More generally, the United States and its allies have the technical capability to create defenses

that can limit to low levels the fraction of the opponent's WMD forces that could expect to reach their targets.

The reverse is not true. A small fraction of the U.S. nuclear weapons could totally destroy any new proliferator, and such states have little prospect of creating a significant defense against them. This is not to suggest that the United States would necessarily retaliate in such a fashion. Rather, such an asymmetry in capabilities to survive a conflict that got out of control should bolster the efficacy of U.S. nuclear deterrence.

Fourth, the prospects now seem minimal that any challenger could offset the U.S. deterrence advantages by obtaining the backing of a great power. With the end of the Soviet Union, there are no longer any great powers that seek *revolutionary* change to the status quo. All enjoy major advantages under the current status quo and understand that war among them could leave them vastly worse off. This is not to say that there is no chance that Russia and China could become increasingly assertive within their regions. Rather, it seems most plausible that they will only pursue evolutionary change and will do so very carefully.

These first four differences imply that the United States and its potential coalition partners will be on far stronger ground in any confrontation with a future WMD-armed challenger than the United States and its allies were in confronting the Soviet Union. In particular, (1) the coalition's superiority in conventional forces means it is most unlikely to have to bear the moral burden of nuclear first use, (2) the coalition will have vastly superior nuclear capabilities to bring to bear should the war escalate, and (3) the very existence of the challenger could be at stake whereas that of the coalition as a whole could not.

These differences suggest that nuclear deterrence of WMD use by regional proliferators poses risks of a smaller magnitude than nuclear deterrence did in the past and, correspondingly, could be more credible and effective. Several other differences suggest that the risk of *any* nuclear use may be somewhat greater in the future and that being well prepared politically to implement a nuclear deterrent strategy will be more difficult than during the Cold War.

First, U.S. public acceptance of the need to depend upon nuclear deterrence appears to be much weaker now than it was at the height of the Cold War. Then, nuclear deterrence was seen as the only practical answer to an enormous Soviet threat posed to European states with which the United States has much in common, and had defended at great cost in two world wars. Now the need for deterrence must be explained on the basis of less well-understood threats and interests.

Moreover, the explanation must convince a public that has witnessed a decade or more of reductions in the numbers and readiness of the nuclear capabilities of the United States and the former Soviet Union and that hopes to escape totally any further dependence on the "delicate balance of terror." This difference implies a need to develop an improved public understanding within

the United States of the importance of nuclear deterrence in facing up to WMD-armed regional challengers.

Second, although the cultural gap between the United States and the Soviet Union was substantial, the two superpowers gradually evolved generally similar understandings of the nature, risks, and modalities of nuclear deterrence. In contrast, the gaps between the cultures of the United States and prospective future challengers may be far greater and, at least initially, more troublesome. As examples, all the current potential challengers nurse deep grievances over what they see as a history of unjust treatment by greater powers. Further, relative to the United States, some seem far more fatalistic, some more sensitive to loss of face, and some less troubled by the prospect that large numbers of innocent people might be killed if WMD were used.

In addition, although the elites of some of these countries show good familiarity with Western deterrence theory, their views of their situations as their WMD capabilities emerge may not evolve as we might expect. For all these reasons, the new proliferators may not assess realistically the risks of war with the United States, of their use of WMD, and of U.S. nuclear retaliation.

This second difference suggests that there may be greater potential for the kind of misunderstandings that could lead to some relatively limited use of WMD. It is thus important to understand and influence the thinking of new and prospective proliferators as best we can.

Finally, in the past, the United States has depended upon nuclear deterrence primarily for the protection of strong and long-standing alliances such as NATO or those between the United States and Japan, South Korea, and several others. These alliances allowed the United States and other members to develop a useful degree of consensus on the necessary role and modalities of nuclear deterrence.

In particular, NATO developed and periodically reviewed policies and preparations that would allow a rational and coordinated response to any challenge requiring the threat or use of nuclear weapons. Through this involvement in joint nuclear deterrence preparations, the NATO allies shared the political burdens and risks of any first use of nuclear weapons that might be needed.

Reflecting political sensitivities, and a less worrisome and immediate threat, coordinated nuclear policies have been less well developed for the United States' other alliances. Still, preparations for general defense contingencies by these other alliances led to the development of institutional arrangements that could allow consultations and joint planning and support for nuclear deterrent actions, if the need were to arise.

Since the end of the Cold War, however, skepticism about the continuing need for alliances has increased. Now many critics emphasize the costs of alliances rather than their benefits. The primary cost seen is their potential to entangle the United States in overseas conflicts that, absent the confrontation with the Soviet Union, no longer seem to be of fundamental importance.

Further, arguments that alliances increase the prospects of conflict by polarizing relations between the "ins" and the "outs" now have greater weight.

In addition, even when new regional WMD proliferators appear, potential partners in alliances and coalitions may find it more difficult to balance their concerns not to offend a new WMD-armed neighbor by uniting against it with their concerns that their security may be in jeopardy if they do not. Such decisions will also be influenced by their confidence that the prospective coalition can be relied on in the face of a tense challenge by an aggressive WMD-armed proliferator.

These last observations imply that the United States may face a very substantial political problem in implementing a nuclear deterrence strategy against WMD-armed challengers in the future. Specifically, by the time the threat becomes clear, even while a coalition of defenders can still come together, it may be too late to develop the arrangements needed to engage the members appropriately in a nuclear deterrence strategy.

IMPLEMENTING NUCLEAR DETERRENCE UNILATERALLY

Thus, an obvious question is raised: If the United States had to implement a nuclear deterrence strategy to protect a vital overseas interest from some WMD-armed challenger, what would be the potential benefits and costs of doing so unilaterally?

There appear to be several potential benefits of unilateral nuclear deterrence by the United States. The first is that the United States could be seen as having greater freedom to act as it saw fit. All else being equal, this apparent freedom could add to the credibility of any nuclear deterrent threats the United States might need to make.

Second, there is no doubt that implementing nuclear deterrence unilaterally would be simpler than developing and coordinating the required policies, plans, and potential actions with others. Third, unilateral implementation would not pose so great a risk of premature disclosure to the public or potential opponents of planning that would surely have sensitive aspects.

On the other hand, unilateral implementation of nuclear deterrence can have some substantial costs. For example, if the course of events were to lead the United States to make an explicit threat of nuclear retaliation that was openly disputed by other key coalition members, the credibility of U.S. nuclear deterrence could be reduced. Even greater potential costs become clear when one considers the prospects that deterrence might fail, leading to U.S. nuclear retaliation, and other painful consequences, for which the United States would be seen to bear primary responsibility. Let me expand on these possibilities.

Although a challenger could make a very limited initial use of WMD aimed more at scaring the coalition off than doing great damage, very destructive initial use seems more plausible. Why risk nuclear retaliation to achieve less than a decisive blow against the intervention capabilities of the United States and its possible partners or against their will to brave further damage?

Any first use of WMD that leads to great damage will lead to intense public anger in the United States and in any other state that suffers it and will seem to justify at least comparably destructive nuclear retaliation. Thus, a failure of deterrence could quickly lead to horrendous damage for the United States and any regional supporters and to at least comparable damage for the initiator.

Whether the participants would be able to terminate the violence after a first exchange of WMD strikes is anyone's guess. Should the use of WMD continue, there is no doubt that the United States would ultimately prevail. However quickly the war were to end, enormous damage would likely have been done both in military and political terms. To appreciate the magnitude, character, and immediate political effects of the damage, consider the following propositions.

First, the damage likely done to U.S. or allied forces and populations, to the challenger's forces and population, and possibly to bystander states as well would be shocking in intensity, extent, speed of appearance, and the strange nature of its effects. Modern media and instant global communications would ensure that terrible images of this destruction, and of the U.S. role in it, would quickly reach the public everywhere.

Second, every decision along the path that led to this eruption of high-intensity violence would be second-guessed by officials, the elite, and the public everywhere, starting from the most fundamental question: Why did the United States have to be involved in the region at all? Supposed opportunities to have avoided the tragic outcome would be identified and discussed at length.

U.S. government leaders would likely be able to justify their actions with arguments that would be compelling in terms of their logic and facts. Nonetheless, given the United States' great power, wealth, and history as a generally benevolent world leader, many at home and abroad would fault it for not having found a way to avoid the tragedy, no matter what the initial provocation might have been. Questions about the decisions that led to the tragedy would be a heavy burden for the U.S. public in general but would fall especially heavily on the most senior U.S. leaders.

Third, although history suggests that the United States would prove magnanimous in victory, its use of nuclear weapons and the horrific nature of the damage done could lead to deep and enduring enmity that would be focused on the United States. This enmity could come not just from the aggrieved population of the aggressor state but from other peoples who, for whatever reasons, were sympathetic to the defeated state.

Finally, longer-term political reactions to its singular role in this disaster could have adverse consequences for the United States and thus for others. To the extent that this painful experience led the United States to retreat from its role as general underwriter of peace and stability overseas, states might conclude that they would need their own weapons of mass destruction. The breakdown in deterrence could also be seen as signaling the end of effective efforts to control the proliferation of WMD.

At the same time, the global community of states might be spurred toward the creation of new institutional arrangements for collective security. Although

these arrangements might benefit the United States, they might instead be overly constraining and have other uncomfortable features. Thus it seems that the international political system might be fundamentally changed by such a breakdown in deterrence in ways that would be very difficult to predict and control.

Clearly, such a breakdown in deterrence could have the most devastating and far-reaching consequences, not just for the United States, but also for the larger international order. Thus, to the extent that the United States implements a nuclear deterrence strategy against WMD-armed regional aggressors unilaterally, it will have to bear single-handedly the many heavy burdens of a failure of the strategy, with all its consequences.

The alternative to implementing nuclear deterrence against a WMD-armed regional aggressor on a unilateral basis is to do so with the active involvement of a coalition. Some of the costs and benefits of such an approach should be fairly clear from the preceding observations. There are some additional values of employing a coalition, however, and spelling out the specific mechanisms by which coalitions help to avoid some of the potential problems identified above is useful.

IMPLEMENTING NUCLEAR DETERRENCE THROUGH A COALITION

Implementing nuclear deterrence through a coalition includes two things. First, it means drawing together a broad coalition to confront any aggression from a WMD-armed regional challenger, rather than acting alone or with the aid of only a few close allies. Second, it means taking strong steps to distribute across the coalition as a whole the responsibility for the potential final outcomes of such a confrontation. It cannot include surrendering final authority over the use of U.S. nuclear weapons.

Sharing the responsibility for potential outcomes requires that coalition members have a say in the key decisions that shape the confrontation from beginning to end. They should also take important actions that openly indicate their support of the decisions made. To share the responsibility for potential outcomes as equitably as possible, the United States should seek the closest consultation with its coalition partners, plan potential nuclear deterrence policy and actions jointly, coordinate on all related declaratory statements that are made, and involve its partners in any nuclear retaliatory actions that may have to be taken. These and other measures for involving the coalition in the implementation of extended nuclear deterrence will be discussed at greater length below.

All states with an interest in the outcome of the confrontation should have a chance to participate in the coalition and to influence its nuclear deterrence policies. As the consequences of a confrontation with a WMD-armed regional state could be very broad, so could the membership of the coalition. Clearly, if management of the coalition is not to become unwieldy, not every potential member can be involved in every possible decision. Thus, states with different

interests would have to be involved in different ways. Still, most, if not all, states should be involved in the fundamental decisions that establish responsibility for the final outcome.

Use of a broadest-possible coalition has a variety of particularly useful benefits for confronting a WMD-armed challenger. First, a broad coalition could create the impression for the challenger that it is facing the entire world singlehandedly. This could strengthen deterrence of his aggression. In particular, although most members would not add militarily significant forces to the coalition, the apparent threat posed by the opponent's WMD would be spread across their numbers. Like a single outlaw facing a posse, the outlaw would know that it could not survive a gunfight, whereas the posse would know that nearly all its members would survive unscathed.

Second, deterrence is also strengthened by reducing the challenger's ability to use its WMD to make attacks that might decisively disable the coalition. By contributing additional airbases, seaports, infrastructure, operating territory, and so on, a broader coalition can enable an intervention force to operate in a more dispersed manner, avoiding concentrations of forces and support activities whose loss to WMD attacks might cripple the intervention.

Third, to the extent that a broad coalition representative of the world community can be employed, WMD attacks made against the coalition would tend to be seen as an insult to the world community. This psychological effect could strengthen the coalition's will to seek retribution. Anticipating this, a challenger could be more strongly deterred from initiating WMD attacks.

Fourth, involvement of the broadest-possible coalition should help to avoid the potential for the confrontation to be interpreted as one culture, ideology, region, or economic group against another. To the extent that the coalition membership bridges such potential divides, it should be better able to understand its opponent's point of view. The collective knowledge of the coalition should allow the best possible chance to resolve the issue at hand without conflict, to identify and understand the opportunities for deterring successfully, and to retaliate for the challenger's WMD attacks in the most appropriate manner, should that become necessary.

Fifth, nuclear retaliation might not be appropriate in every case where there was some very painful use of WMD against U.S. forces. For example, nuclear retaliation against some desperate opponent that had made a "last gasp" use of nuclear weapons might not make sense if that opponent would be defeated in about the same time and at about the same cost in any case. In such a circumstance, a broader coalition could provide more international political support for a U.S. leadership and for leaderships in the other nuclear-armed states that might want to resist strong domestic political pressures for nuclear retaliation.

Involving the coalition explicitly in the implementation of the nuclear deterrence strategy that would help to protect it from the challenger's WMD strikes has additional benefits beyond its most important role of distributing the responsibility for potentially awful outcomes. First, by thus involving the

coalition, the United States and other nuclear-armed members of the coalition would be providing the strongest-possible assurances that the coalition members are really under the "nuclear umbrella."

Second, implementing nuclear deterrence with the support of a coalition would underscore the necessary international role of U.S. nuclear forces and help avoid misimpressions that the United States intended these forces for anything more than the narrowest-possible deterrent role. Misimpressions of these kinds would work against the long-standing U.S. interest in minimizing and rolling back proliferation of weapons of mass destruction.

Finally, implementing deterrence through an international coalition could set some valuable precedents. The precedent set in providing deterrent cover for regional states could help to assure them that future needs for deterrence of WMD-backed threats would be met, thus reducing concerns that they need their own WMD-based deterrent forces. The international mechanisms employed, and the policies and actions taken, could become a model for responsible future implementations of extended nuclear deterrence.

There are, of course, some potential drawbacks to implementing extended nuclear deterrence of challengers through a coalition. As mentioned in the previous section, the most serious is that a coalition might appear to allow the United States less freedom of action. In addition, implementation through a coalition would inevitably be more complex and would pose more risk of a compromise of sensitive information. On the other hand, the greater legitimacy of a coalition, the pain that its members might have suffered in a challenger's initial use of WMD, and their concerns about coexisting with a regional state that had both owned and used WMD should lead them to strongly support nuclear retaliation, making it more credible than if the United States had to act alone.

Further, it may be possible, with some preplanning, to reduce the extra complexity of involving coalitions in the implementation of extended nuclear deterrence. In view of the uncertainties in how a coalition might come together, and the sensitivities involved in dealing with the nuclear deterrence question and in aiming deterrence at any state prematurely, this preplanning could only go so far. Still, some useful preplanning steps can be identified. This will be taken up below.

All in all, the arguments presented in this and the previous section suggest that if the United States must confront a WMD-armed regional challenger, it would be far better off if it can implement the needed nuclear deterrence policy with the active support of the broadest-possible coalition. The obvious question is: Why would potential members of such a coalition be interested in becoming so explicitly involved with the coalition and U.S. nuclear deterrent strategy?

INCENTIVES TO JOIN THE COALITION AND SUPPORT ITS NUCLEAR DETERRENCE STRATEGY

We assumed at the outset that the United States sees the regional interest at stake as vital and has greatly superior conventional forces. Thus, the challenger will be confronted and, at a minimum, forced to surrender any gains it might have made while the United States was activating an effective conventional defense. The United States might also be using its conventional forces to neutralize the challenger's WMD to the extent possible. In short, the challenger will find itself facing defeat of its initiative, and perhaps worse, and will have to consider whether to back down or to make use of WMD capabilities that may be eroding away. This situation seems likely to be very dangerous for all involved.

The arguments for staying on the sidelines of this dangerous contest, if possible, seem clear. Any state that supports the U.S. intervention would thus give value to WMD strikes aimed at halting, impeding, or avenging that support. Further, regional states offer sensitive targets, such as capital cities, that would be easier to hit than U.S. targets. In addition, regional supporters would seem likely targets for any continuing use of WMD motivated by any U.S. retaliation for the challenger's initial WMD attacks. Finally, supporters would have to live with their increased sense of responsibility for the final outcome, and washing one's hands of a difficult problem is always a temptation.

It may not be possible to remain on the sidelines, however. Even if some regional state were to proclaim itself neutral, the challenger might still find it advantageous to hold that state hostage with the threat of WMD strikes in order to put pressure on the United States and its partners to settle on more acceptable terms. In addition, the effects of a war involving the use of WMD could spill over regional borders in a variety of forms. These might include contamination of land and water supplies, spread of contagious diseases, overwhelming flows of refugees, disruption of sources of goods, destruction of common cultural sites, such as religious shrines, and intense new resentments felt by the combatants toward those who did not take sides.

On the other hand, the arguments that might favor a state's participation in a U.S.-led coalition, and its involvement in implementation of the coalition's nuclear deterrent policy are more numerous, and seem strong.

Perhaps the most important argument is that participation should provide the best opportunity to influence how the confrontation is played out, from its initial stages to its end. Although states with interests in the region might be expected to view the aggressor's challenge in generally similar ways, the stakes at risk would be far larger for some states than for others and are likely to be weighed differently. Participation is needed if a state is to follow coalition planning, make its views known in a timely manner, and win the influence that comes from contributing to the defense effort and sharing the risks. In particular, for many regional states, the primary reason for participation would likely be to moderate the actions of members that do not appear to have as much to lose.

A second reason to participate would be to gain the explicit protection of extended nuclear deterrence from the United States and other nuclear-armed coalition members. To the extent that the United States needs the political and military support of a coalition, it would likely need to offer to retaliate on behalf of members struck by the challenger's WMD and in the event that WMD were actually used and caused major destruction, would likely have to honor its offer.

Third, supporting the coalition would give a prospective member a claim on defenses available to other members. The more capable coalition members, particularly the United States, would be expected to share their missile and air defenses, and useful assistance could be provided to protect populations from chemical and biological attack. The possibility of sharing such protection could easily be both a powerful attraction, and a domestic political prerequisite, to coalition membership by regional states.

Fourth, the United States could be expected to win any dispute over a vital interest. Joining and supporting a U.S.-led coalition might be rewarded, both during a crisis and when the political settlement ending the dispute was struck. Fifth, as discussed earlier, some potential coalition members should see that a united front would be a stronger deterrent against the challenger.

Finally, some prospective members should find this kind of cooperative deterrence arrangement a wise precedent to set for the long run and see supporting it as more valuable for that reason. The actual implementation of U.S. nuclear deterrence with the involvement of a supporting coalition could lend a reassuring reality to the joint pledge recently made by all the declared nuclear powers to come to the aid of any state threatened or attacked with nuclear weapons.[3]

The net effect of these and other considerations on the likely size and cohesion of a coalition for facing a WMD-armed regional aggressor is hard to assess. It seems probable that the United States could expect a significant number of states to join such a coalition. Almost any challenge one can realistically imagine seems likely to appear as a vital threat to at least a few regional allies, and Western allies that have been closest to the United States historically can also be expected to see truly vital threats to the United States as vital threats to them as well.

The additional attractions of joining a coalition suggest that it would have more members than just the United States' closest allies plus those who are directly and immediately threatened. As argued above, these attractions include coverage under the U.S. nuclear umbrella as well as other forms of protection, influence over how a war gets fought, a greater share in the potential benefits of the political settlement, and a role in setting a useful precedent for how regional nuclear deterrence should be implemented in the future. In addition, there are the uncertain prospects of being able to remain on the sidelines without getting hurt.

[3] U.N. Security Council Resolution 984, April 11, 1995.

ADVANCE PREPARATIONS FOR COALITION INVOLVEMENT IN NUCLEAR DETERRENCE

However promising the underlying potential for creating a broad and effective coalition, and arranging for its appropriate involvement in implementing nuclear deterrence, the United States cannot count on having much time to do so after the need arises. Thus, it is important to identify the kinds of arrangements that could be needed and to make whatever advance preparations are reasonable.

Advance preparations can help a future coalition implement a joint nuclear deterrence strategy quickly and smoothly. The increased prospects of a smooth and timely response to an aggression backed by the threat of WMD can help to deter such aggression. Advance preparations can also signal to prospective proliferators that the coercive power they might hope to gain from WMD will be substantially neutralized from the outset.

Clearly, such preparations can only go so far, given current political sensitivities and the uncertainties concerning how a WMD-backed regional challenge might arise. The reasons to take some initial steps seem very good, however.

The general goals of any advance preparation would include (1) leading the international community toward a better understanding of the problems posed to the world order by continued proliferation of WMD, (2) further increasing international appreciation of the degree and character of the U.S. commitments both to opposing proliferation and to countering it wherever necessary, (3) clarifying for the international community the role that U.S. nuclear weapons can be expected to play in deterring threats, use, and even acquisition of WMD, and (4) making more explicit the roles that states involved in a region would be expected to play in supporting nuclear deterrence should a WMD-backed challenge emerge there.

There are at least four constraints that must be respected in making such advance preparations. First, national sovereignty over whether and how U.S. forces are used cannot be compromised. This is also true of our partners' forces and territory. Preparations need to be understood as a matter of developing reciprocal understandings of what the United States and its partners should expect of each other, subject to further evaluation and confirming decisions by the highest political authorities when specific challenges requiring nuclear deterrence emerge.

Second, the specificity of any preparations for extending nuclear deterrent cover over a coalition should keep pace with the specificity of the potential WMD-backed challenge. Thus, unless a state has both developed a capability to make WMD attacks and behaved irresponsibly, it should not be treated as the specific object of such preparations. Indeed, states suspected of harboring WMD ambitions and evil intentions should have the educational benefit of participating in general discussions of how the potential of the contraband weapons they might seek would be suppressed.

Third, advance preparations for implementing extended nuclear deterrence for coalitions should cut methodically across cultural, regional, economic, and political lines. The threat posed to the world order by WMD is a problem for the international community, not just the United States. Any necessary use of extended nuclear deterrence to suppress that threat should not be confused with other issues that divide the international community.

Finally, as with the specific decisions involved in actually implementing an extended nuclear deterrence policy against a WMD-backed regional challenge, not every state can be involved in every aspect of the advance preparations needed. At the same time, a way should be found to involve every interested state in discussions of the fundamental issues raised by WMD-backed aggression. The following paragraphs will concentrate on two classes of states with particularly strong interests in the outcomes of confrontations with aggressive WMD-armed states, the declared nuclear powers and prospective coalition members.

Taking these general goals and constraints into account, there appear to be at least six categories of preparations where some useful progress might be made.

The first is to develop an improved understanding among potential coalition members of the fundamental problems posed if a WMD-armed state were to challenge the status quo. The common techniques of having international working groups analyze and debate the issues, and play formal games designed to pose the questions sharply with hypothetical scenarios, can provide useful insights. Although government officials could participate discreetly, nongovernment organizations should be capable of performing much of this work. In fact, some of these kinds of activities are already under way.[4] What is needed is more effort.

The second category of advance preparations involves modifying the approach the United States and its partners would use for conventional interventions to make it less vulnerable to disruption or defeat when attacked with WMD. Perfect protection against WMD attack will necessarily remain impossible. Nonetheless, a combination of counterforce capabilities, less-than perfect active and passive defenses, dispersal, mobility, and operations from safe locations can make decisive disruption of an intervention very unlikely, even with WMD attacks far greater than those any new proliferator is likely to be capable of for many years. Such measures can also hold potential WMD casualties among military forces to levels more typical of conventional war and reduce the damage potential to civilians by a factor of 10 to 100 or more.[5] These various measures could make deterrence of WMD attack easier, since a

[4] The series of "Day After" games run by Rand are a useful start in this direction. As of early 1996, teams from a variety of other nations had already taken part. See: Marc Dean Millot, Roger Molander, and Peter Wilson "The Day After. . . " Study: Nuclear Proliferation in the Post-Cold War World, Rand, Santa Monica, Calif., 1993.

[5] See footnote 1, above.

proliferator should be less inclined to risk nuclear retaliation for WMD attacks that cannot stop a military intervention against him.

Discussions of at least some of these measures would be useful. Consultations on the need for more capable antitactical ballistic missiles have taken place with various allies for years, but more needs to be done. Efforts to develop capabilities to destroy opposing WMD and their delivery systems even before they can be used are far more sensitive, and the potential for substantial discussion of this topic seems limited. The remaining measures, particularly passive defenses against chemical and biological attacks and dispersal of forces to protect against nuclear attack, do not appear to have gotten nearly as much attention as their potential value warrants. Alternative ways to implement such measures should be explored and assessed. These steps need to be taken cooperatively by the governments of the United States and potential coalition partners.

The third category of advance preparations is development of an understanding of the broad outlines of policies for extending nuclear deterrence to coalitions. Confrontations with a hypothetical WMD-armed challenger could be gamed to explore the character of joint policies for extending nuclear deterrence most effectively to states threatened by the challenger in different ways. It seems likely that such games and supporting analyses would also make clear the nature of the institutional arrangements needed.

Games and analyses could also consider the conditions under which the coalition might want to signal its retaliatory capabilities and intentions, and the kinds of statements that could be appropriate in different circumstances. They should certainly highlight the importance of having the coalition members present a united front in any declarations regarding nuclear retaliation.

A fourth category of advance preparations might explore different philosophies and conditions that could guide nuclear retaliation. A useful question to consider would be how to assess the relative importance of (1) the simple fact of WMD use by an opponent, (2) the magnitude of the destruction caused, and (3) the projected course and outcome of the conflict with and without nuclear retaliation. Examining this question would surely show that there are situations where nuclear retaliation for WMD use would not be needed. In this case, it would be important to understand how to brake the political momentum for retaliation.

Fifth, it is very important for potential coalition partners to understand alternative ways in which they might support any nuclear retaliatory strikes that could prove necessary. Clearly, nuclear-armed coalition members must coordinate any nuclear strikes they might think to make and, ideally, should seem to bear generally comparable responsibilities for the nuclear retaliatory actions of the coalition as a whole. Nonnuclear members could support such strikes by actions ranging from statements of support; allowing attacks to overfly, be launched from, or recovered onto their territories; having their aircraft fly supporting missions to suppress any opposing defenses; participating as crew members on attacking aircraft; and so on. In the event that the strategy

actually had to be implemented, coalition partners' actions of these kinds would demonstrate support for the extended nuclear deterrent strategy. Developing potential coalition partners' understanding of how such supporting actions might be done would seem to be the business of the governments of potential coalition members, particularly military leaders and personnel with the special training required.

Although U.S. nuclear "programs of cooperation" under which NATO allies' aircraft armed with U.S. nuclear weapons would have flown strikes against Warsaw Pact targets suggest themselves as a possibility, such arrangements would seem very difficult to replicate for a temporary coalition formed in a crisis. Moreover, there seem to be plenty of other ways in which coalition members would be able to make their support of any required nuclear retaliation clear.

Finally, as uncomfortable as this topic may be, it would be useful to think through how the United States and its partners could provide humanitarian aid to victims of any breakdown in deterrence of WMD use. In the context of the large nuclear war that was so feared during the Cold War, it seems to have been assumed that the nations involved would have little capacity to assist others. In the type of WMD use that might occur as the result of a challenge by a regional proliferator, the defending coalition would have considerable capability to assist the defeated challenger, even after meeting the needs of its own survivors of nuclear-biological-chemical attacks. Moreover, as the prospective "winner" of a confrontation with a WMD-armed challenger, the coalition would inherit this responsibility. Indeed, one of the reasons a challenger might see for surrendering after an initial exchange of WMD attacks is to get humanitarian assistance that it would desperately need. The need to provide aid to a surrendered opponent should be a factor in coalition decisions on the magnitude and character of any required nuclear retaliation.

Looking back over these six categories of advance preparations, it seems likely that an aggressive and widely visible effort to pursue them all could create great concerns for the public and governments of potential coalition members. Fortunately, such a comprehensive effort is not needed under current conditions. As noted above, preparations for implementing extended nuclear deterrence should keep pace with the evolution of the WMD capabilities of potential regional challengers, and none of the current rogues seem prepared to challenge their neighbors with WMD, with the possible exception of North Korea, whose neighbors are all great powers or have long-standing alliances with the United States.

What would be useful in the near term would be to engage representatives of some of the key regional states in quiet discussions of the overall problem of how to arrange for extended nuclear deterrent cover for international coalitions. These discussions would emphasize particular categories of preparations requiring the greatest lead time. In addition to further development of antitactical ballistic missile capabilities and associated deployment plans, the development of strategies for intervening conventionally against a WMD-armed

challenger at minimum risk would seem to be a particularly useful area to emphasize. Substantial reductions in risk can be achieved by changing operational plans so as to allow coalition forces to enter the theater, get adequate logistics support, and perform their missions without offering highly concentrated military targets.

Perhaps the most important advance preparation would be to lead potential coalition partners to an understanding of the overall problem of WMD-backed challenges and of why and how partners must be prepared to support extended nuclear deterrence policies. To the extent that this understanding can be established beforehand, the deterrence policies and actions needed are more likely to be accepted without extended and divisive political debate.

This understanding need not be elaborated in detail and translated into specific plans, preparations, and exercises in the near term. Given a shared understanding of the fundamental requirements of a joint nuclear deterrence strategy, it should be possible to make detailed preparations quickly in the event that a challenge from a WMD-armed renegade begins to emerge.

CONCLUSIONS

The main conclusion of this paper is that, in any future confrontation with a WMD-armed regional challenger, the United States and potential coalition partners will have strong incentives to involve each other in implementing jointly an extended nuclear deterrent strategy to deter the challenger from initiating the use of WMD. Given sensitivities about the subject of nuclear deterrence, about aligning prematurely against any regional state, and about explicitly pointing nuclear deterrence at specific states, and given the uncertainties about which states would become involved, specific arrangements for how extended nuclear deterrence might be implemented jointly cannot be well defined in advance.

Still, there are good reasons to make some advance preparations. The best are (1) that there may not be enough time to sort out the fundamental questions raised by a joint extended nuclear deterrence strategy, if they are only addressed once a confrontation with a WMD-armed challenger has already emerged, and (2) that preparations in advance may help to deter such a confrontation and undermine the value of obtaining WMD in the first place.

A second conclusion is that the most important advance preparation is the development among potential coalition partners of general understanding of the problem that would be posed by a WMD-backed challenge to a vital interest and of the expectations that the coalition partners should have of each other regarding extended nuclear deterrent policies. Such understandings could help the required arrangements to come together quickly when needed, even if the details could not be pinned down in advance. The most important aspect of such understandings is that the United States and its coalition partners must be seen to share the responsibility for the outcome of any such confrontation. This would be particularly important if deterrence were to fail.

The arrangements under which this responsibility is shared cannot compromise the United States' sovereign right, or the right of any other nuclear state, to determine whether and how its nuclear weapons might be used. At the same time, effective sharing of the responsibility for the outcome of any confrontation risking use of WMD requires the United States to take its partners' interests and political needs seriously in implementing extended nuclear deterrence. The United States has faced the challenge of balancing these two considerations for decades, as part of the extended nuclear deterrence strategy for NATO. There, although the United States has the final say over any use of its weapons, allied groups provide political and military inputs for planning in peacetime and, time permitting, consult on possible nuclear weapons use in wartime.

This is not meant to suggest that the United States should attempt to form standing alliances to contain the aggression of regional states that seek WMD. As argued above, the political support for creating new alliances does not exist. Still, it is important that preparations for what might be called "collective deterrence" of WMD-backed regional challenges keep pace with the development of such threats. Such preparations can help let prospective regional proliferators know that WMD would be of little use in underwriting aggression, but that obtaining it could polarize the international community against them.

APPENDIX D

The Remaining Unique Role of Nuclear Weapons in Post-Cold War Deterrence

Wolfgang K. H. Panofsky, Stanford Linear Accelerator Center (Emeritus)

BACKGROUND

In the post-Cold War era, the United States has a strong reason to define the deterrent role of nuclear weapons to be as separate as possible from other means of deterring armed conflict. Several factors support such a widened gap. The first is that the United States is now the world's preeminent military power measured by prowess in *conventional* armament, and therefore the United States should be able to cope with foreseeable large-scale conflicts with conventional forces. There are, of course, smaller hostilities, such as those now unleashed as the result of loss of control over ethnic or other internal tensions which are beyond the reach of U.S. conventional forces, but nuclear intervention is surely not a solution. The second is that the principal nuclear threat to U.S. security now derives from proliferation of nuclear weapons rather than conflict among the five declared nuclear weapons states. There is at this time no plausible scenario projecting nuclear conflicts among the five, with a possible exception of a reemergence of a highly nationalistic aggressive regime in Russia. That latter threat, be it plausible or implausible, will take considerable time to evolve considering the derelict state of Russian military forces.

Proliferation of nuclear weapons is another matter. The United States has the greatest possible interest in stemming nuclear proliferation; nuclear weapons in some sense are the "great equalizer" among powerful and nonpowerful nations as firearms can be the equalizer between physically strong and weak individuals. Nuclear nonproliferation is codified in the Non-Proliferation Treaty (NPT), which came into force in 1970 for an initial 25-year period. This treaty is subject to periodic review, and a successful extension conference was concluded in the spring of 1995. With both Russia and the United States, and most of the Western allies, strongly favoring extension for an indefinite period, the conference extended the NPT without limit of time. Although this result is gratifying, it was not reached without controversy stemming from the inherent tensions the nuclear nonproliferation regime implies.

The NPT codifies an uneasy bargain among the nonnuclear weapons states party to the treaty and the five nuclear weapons states. The components of this bargain interpreted broadly are the following:

- The five declared nuclear weapons states are obligated not to transfer nuclear explosives and information concerning their design to

nonnuclear weapons states, and nonnuclear weapons states agree not to produce or accept nuclear explosives.

- Nuclear weapons states agree to make civilian applications of nuclear technology freely available to nonnuclear weapons states party to the NPT, provided such civilian activities are being carried out under "full scope" safeguards administered by the International Atomic Energy Agency.
- By its nature this arrangement is *discriminatory* in freezing by treaty designated "haves" and "have-nots" in respect to nuclear weapons. To make this discriminatory regime acceptable to all NPT signatories, the nonproliferation bargain further provides (codified in Article VI of the NPT) that the nuclear weapons states shall diminish their nuclear arsenals and work toward their eventual elimination. Although this is not explicitly stated, the implication is that the nuclear weapons states should *diminish the role of nuclear weapons as instruments of international policy to the maximum extent consistent with their national security.*
- The nuclear weapons states shall give both "negative" and "positive" *security assurances* to nonnuclear weapons states, meaning that they shall be committed not to use nuclear weapons against nonnuclear weapons states and shall give assurances to protect nonnuclear weapons states against threatened or actual nuclear attack by other states.
- Whether this bargain will in fact hold or erode in time is one of the great challenges facing humanity. In the past it has never been possible to stem the diffusion of new military technologies once introduced. Technical barriers such as prohibitions on the transfer of critical materials and technology can only slow but not prevent proliferation. Although fissionable materials are essential to the construction of a nuclear weapon, most potential proliferators could produce the material indigenously given adequate resources. Nuclear weapons of very substantial, but less than optimum, capability can be constructed without access to information classified by the United States. Technical competence is growing throughout the lesser-developed world. Thus, ultimately, nuclear weapons proliferation can be prevented only if the nonnuclear weapons states are persuaded that their national security is served better without the possession of nuclear weapons than by their acquisition. Unless proliferation is to be countered by force or threat of force, the nuclear weapons states, including the United States, must view all elements of the nonproliferation bargain with utmost seriousness in revising their deterrence policies and therefore the roles which they expect nuclear weapons to play in the future.

The Nuclear Posture Review (NPR) completed late in 1994 is *not* a bottom-up reexamination of these roles but only a pragmatic examination of the current situation and the near-term nuclear posture; the NPR is described as "interim" by the Department of Defense. While confirming the decreased role of nuclear weapons in U.S. security policy, the NPR essentially advocates a "reduce and hedge" policy: the reductions in nuclear weapons are essentially those already agreed to during previous administrations and the hedging provides for regrowth of U.S. nuclear forces by "re-MIRVing," that is, increasing the number of warheads of the U.S. strategic missile forces. The question of the basic future roles of nuclear weapons was not explicitly addressed; yet it is in this respect that the end of the Cold War implies the largest changes.

THE HISTORY OF NUCLEAR DETERRENCE

Historically, U.S. nuclear weapons served a variety of evolving purposes. The purpose of the first two nuclear weapons detonated over Japan was clear: they were to secure early termination of World War II. The controversy over whether Japan's surrender was imminent at any rate and whether the use of these weapons resulted in fewer combined Japanese and American casualties than if an invasion of Japan had been necessary will never be fully settled, nor will the question of the length of time by which the use of nuclear weapons actually did shorten World War II.

We will also never know with certainty the extent, if any, to which the stockpiles of nuclear weapons with their rapid growth in the United States and Soviet Union during the Cold War deterred armed conflict. The historical evidence is clear that conventional weapons, including the potential availability of chemical or biological weapons, have *not* deterred all-out world wars; conversely, nuclear weapons also have *not* deterred the hundred or so localized nonnuclear conflicts which have taken a larger toll during the nuclear age than that inflicted by the nuclear weapons on Hiroshima and Nagasaki. Whether the ascendance of nuclear weapons has deterred, and thereby prevented, all-out large-scale war between the end of World War II and today will remain a subject of debate with happily no physical evidence to support either side.

There is, however, no question that what has been called "existential deterrence" by nuclear weapons has been a major military factor since World War II. Although the Cold War consumed enormous resources and threatened a major holocaust, the superpowers actually conducted foreign policy and military operations with a great deal of caution. Direct contact between U.S. and Soviet forces was largely avoided, with essentially all actual military hostilities restricted to client states of the two powers. There were indeed tense moments, such as the Cuban missile crisis and the bombardment of Russian ships at Haiphong during the Vietnam War, but these crises were in effect settled by the preponderance of conventional power, with nuclear threat only as backdrop.

The nuclear deterrent concepts during the Cold War evolved from "massive retaliation," which threatened the Soviet Union with nuclear reprisals in case of

unacceptable conduct, be it nuclear or nonnuclear, to the doctrine designated as "flexible response" and then "extended deterrence." In essence flexible response provided that the United States would use nuclear weapons first in case Soviet aggression in Europe would threaten defeat of NATO by conventional forces. Extended deterrence generated in effect a U.S. nuclear umbrella over its allies in case of Soviet aggression. The Bush administration proclaimed a doctrine of "weapons of last resort" for the use of nuclear weapons, restricting their use to situations where U.S. supreme national interests were threatened.

Each of the above doctrines has always reflected, deliberately or not deliberately, a large degree of ambiguity. With the U.S. homeland vulnerable to nuclear retaliation by the Soviet Union, the question of when or whether a U.S president would actually order the use of nuclear force could never be projected in advance but would have to be resolved under the exigencies of the moment. The use of nuclear weapons was considered, but firmly rejected, during the Vietnam and Korean conflicts.

Another internal contradiction reflected in the U.S. post-Cold War nuclear posture was the tension between secrecy and deterrence. The SIOP, that is, the operational plans among which the President could choose for the execution of nuclear strikes, remained very highly classified; such quantities as the total nuclear inventories, the yield and precision of U.S. nuclear weapons, and many other "things nuclear" were withheld from the public and thereby possibly from the Soviets. Yet the essence of deterrence is to threaten an opponent with a credibly unacceptable outcome, and the opponent could evaluate the reality of the threat only if he has knowledge of plans and deployments. This need for secrecy in the deterrent posture is also now under review and the Department of Energy's "Openness Initiative" is a move toward declassifying at least some of the total U.S. nuclear resources, even if operational plans beyond the general outline provided by the NPR remain secret. Of course much of the supposedly secret inventories have de facto been known to the public, and certainly to the Soviets, as is witnessed by many publications on the subject.

The basic internal contradiction of any deterrent posture which projects *non-use* of nuclear weapons by threatening the *use* of nuclear weapons remains. The question of the *credibility* of the U.S. nuclear deterrent posture has remained a continuing subject of debate, and the evolution of the French and British independent nuclear deterrent forces bear witness to this dubious credibility. But all this is history with the end of the Cold War, with the United States emerging as the supreme military power in conventional arms, and with proliferation of nuclear weapons constituting a larger threat to U.S. security than the risk of a nuclear exchange among the nuclear powers. What residual mission for nuclear weapons can be justified?

FUTURE NUCLEAR WEAPONS MISSION

Although initially acquisition of nuclear weapons was generally justified by a "more bang for the buck" rationale, the *core purpose* of U.S. nuclear weapons

has always been to deter the threatened or actual use of nuclear weapons by foreign powers against the U.S. homeland, U.S. allies, or U.S. interests overseas. During the Cold War, this core purpose usually incorporated the term "mutual" in such descriptions as mutually assured destruction or mutual deterrence. Barring reignition of NATO tensions with Russia, with its still partially intact nuclear weapons, the deterrence aspect of U.S. policy has now lost its bilateral focus and "mutual" no longer applies. However, the core purpose, referring to deterrence of nuclear aggression from whatever quarter it might originate, remains a principal rationale for retention of nuclear weapons.

There is continuing debate over whether, or how, the concept of nuclear deterrence can be, or should be, modified from its bilateral meaning during the Cold War to deterrence of potential proliferators presumably from the Third World, including the so-called "rogue" states. During the Cold War the quantitative size of the required nuclear forces on the part of the United States which might deter the Soviet Union was always debatable. But the basic concept that *responsible leadership* would refrain from hostilities if the very survival of their nation (or their own leadership), or their ability to continue armed conflict, was threatened has rarely been doubted. Yet during the Cold War, the number of U.S. nuclear armaments became vastly in excess to satisfy the requirement that the Soviet Union could not continue hostilities after U.S. retaliation by its forces surviving a conjectured Soviet first strike. It should be noted that delivery of about 100 nuclear weapons could reduce the electricity supply in the Soviet Union by over a factor of two and that the impact of 150 nuclear weapons could reduce industrial capacity by a similar factor. Again a few hundred weapons would reduce deployed general-purpose forces of the Soviet Union and command and control centers by a large factor.

Today such figures are overestimates for required deterrent forces against a possible reemergence of a Russian nuclear threat: Russia contains only parts of the former economic assets of the former Soviet Union and its military basing structure. Thus the core purpose against the reemergence of an aggressive Russia requires forces only a small fraction of those contemplated for START II. Under the core deterrent role of nuclear weapons, the "hedge" provided by the NPR is unnecessary and large reductions below START II levels are feasible.

The question continues to surface whether the assumed *rational* leadership of the then Soviet Union, and presumed to exist currently in Russia, has now been superseded by the potential of *irrational* leadership on the part of Third World countries or possibly new leadership of Russia. Since any theory of deterrence requires some degree of rational leadership of the to-be-deterred party, claims continue that we are now facing "undeterrable" states. I consider such arguments to be unproductive and to some extent insulting to the leaders of the Third World. I find it impossible to distinguish the rationality of a Stalin, Hitler, Khadaffi, Saddam Hussein, or Kim Song-II in this respect.

No deterrence strategy can ever fully assure coercion of an opponent into inaction. The risk of irrational response, or the evolution of circumstances

which even rational leadership cannot control, can never be fully ruled out. Yet today, although certain leaders might be ruthless and may miscalculate, the "rogue" status of certain nations does not in any way imply that they are suicidal. Although the possibility of suicidal fanatic leadership cannot be totally discounted, the history of the Gulf War and subsequent confrontations has demonstrated that leaders of "rogue" nations do back down when appropriately confronted.

The threat of nuclear terrorism by subnational groups, with or without acknowledged encouragement by the leadership of "rogue" nations, is another matter. A nuclear response against such threats may not be feasible—the home base of the potential attacker may not be known. The threat of nuclear weapons in the hands of suicidal fanatics, such as the Japanese cultists who recently released poisonous nerve gas in the Tokyo subway, can clearly not be credibly countered by deterrence in any form. Only worldwide vigilance and an unrelenting effort to prevent the possession of nuclear weapons by such groups can limit this risk.

Thus although indeed the "core" deterrent role of nuclear weapons (or any other strategy) will not prevent delivery of nuclear weapons under all conceivable circumstances, deterring nuclear aggression remains the least risky military course in preventing such a catastrophe. Defenses of sufficient impenetrability to prevent the delivery by any means of a sufficient number of nuclear weapons to inflict horrendous damage are demonstrably impossible. The risk inherent in any potential catastrophe is the product of the *probability* of occurrence of such a catastrophic event times the *consequence* of such an event. *The probability* of nuclear weapons delivery can never be reduced to totally zero as long as nuclear weapons remain, but the core deterrent function of U.S. nuclear weapons remains the principal means to minimize this probability in today's world. The consequence of potential delivery can be reduced from what used to be potential annihilation of civilization to what even now would be an unprecedented catastrophe but one of finite dimensions. Therefore risk minimization demands both retention of the core deterrent purpose of nuclear weapons combined with the maximum feasible reduction of stockpiles consistent with that purpose and an increased emphasis on the safety and reliability of command and control.

For the above reasons the core purpose of nuclear weapons, that is, deterrence of nuclear threats or actual use of nuclear weapons, has retained its value in thepost-Cold War era. The question remains whether this is the only purpose which should form the basis of the U.S. nuclear posture in the future.

Justification for the flexible response doctrine, which became NATO policy under the Cold War, has now lost its validity, since defeat of conventional U.S. and NATO forces by a superior opponent in Europe is no longer a possibility. Yet this NATO policy has never been formally withdrawn. It is worth noting that during the Cold War the U.S. flexible response posture was met by the Soviet Union's proclamation of a "no first use" policy knowing full well that NATO would not accept this. Now with Russia's conventional forces

drastically reduced in number and of dubious morale and readiness, Russia has turned around and proclaimed for itself the former NATO doctrine of flexible response, that is, an implied willingness to use nuclear weapons in response to threatened conventional defeat. Clearly U.S. interests would be served best by diplomatically opposing this reversal and by monitoring the pattern of Russian deployments, rather than by the United States retaining a no longer needed flexible response posture.

Continuing to describe the function of nuclear weapons as weapons of last resort, as was introduced during the Bush administration, has superficial attractiveness but could have serious negative consequences in view of the overriding interest of the United States in the nonproliferation of nuclear weapons. There is no plausible or foreseeable nonnuclear threat faced by the United States either in respect to its homeland or abroad which could threaten U.S. supreme national interests and which could not be countered by conventional means. In contrast many states of the world face severe threats to their very existence. The "weapons of last resort" doctrine, when applied to such states, constitutes a valid excuse for such states to acquire nuclear weapons; indeed the justification for the nuclear weapons potential of Israel and Pakistan is just that. In fact, under such a doctrine, possession of nuclear weapons is much easier to justify for such states than it is for the United States. In other words, the weapons of last resort doctrine can provide justification for universal nuclear proliferation; therefore this U.S. doctrine, which was not formally revoked after the end of the Cold War, should be abandoned.

The deterrent value of nuclear weapons against threatened or actual use of chemical and biological weapons continues to surface. Such weapons, together with nuclear weapons, are frequently classified as weapons of mass destruction (WMD). I consider aggregation of nuclear, chemical, and biological weapons into a single WMD category to be counterproductive. Chemical weapons are by no means weapons of mass destruction. In fact the military effectiveness of chemical weapons for a given weight of delivered munitions may be less against prepared enemy troops than that of conventional explosives. They remain principally weapons of terror meant to intimidate civilian populations. In contrast nuclear weapons can increase the destructive energy delivered by a given weight of munitions by well above a factor of 1 million relative to conventional explosives.

In principle biological weapons may produce lethal results comparable to nuclear weapons per unit weight of delivered munitions against civilian populations, but happily the military effectiveness of biological weapons remains to be established. Biological weapons are not effective battlefield weapons. Biological weapons have not been used in modern times except in a limited way by the Japanese in the Manchurian conflict. Whatever the eventual lethality of biological weapons may turn out to be, biological weapons are not expected to be decisive or even major tools in warfare in the foreseeable future. Therefore biological and chemical weapons should not be classified in a single WMD category with nuclear weapons; their evolution should be countered by

military nonnuclear means and pursuit of treaties and conventions specifically dedicated to that purpose.

Threatening the use of nuclear weapons to deter such weapons is doubly counterproductive. By proclaiming that nuclear weapons may be necessary to counter biological or chemical warfare, the United States may inadvertently actually accelerate the development of these means of warfare by de facto characterizing them as the "poor man's nuclear weapon." Moreover, extending the potential use of nuclear weapons to deter chemical and biological weapons runs counter to the obligation assumed by the United States under the nonproliferation bargain to shrink rather than expand the military and political leverage of nuclear weapons. This obligation is in fact recognized in the NPR, which emphasizes that the purpose of the DOD counterproliferation initiative is to give military commanders, and the President, a sufficient range of nonnuclear options to contain the biological and chemical weapons threats.

Similar arguments apply to future uses of nuclear weapons in foreseeable military situations where such use might be more cost-effective than conventional means of military action. For instance deeply buried command and control centers might be easier to dig out, enemy massed armor might be more effectively attacked, and other specialized military objectives might be easier to obtain. Yet to the extent that such military missions can be accomplished at all, they can be executed with conventional means. The bargain documented by the NPT obligates the United States to deemphasize rather than to expand the role of nuclear weapons. This obligation should take precedence over cost-effectiveness for highly limited and specialized conjectured situations.

CONCLUSIONS

- The core purpose requires a considerably smaller number of strategic nuclear weapons than those implied by START II, and therefore a clear understanding of this sole role should make possible a more aggressive U.S. position in seeking reductions in START III. The naval ballistic missile nuclear submarine force is apt to remain the backbone of that role for the foreseeable future. The core role does not require a significant number of tactical nuclear weapons. Thus the total number of U.S. nuclear warheads, now foreseen to be nearly 10,000 for the beginning of the next century once START II has been implemented, could be drastically reduced. Tactical nuclear weapons could be totally eliminated.

- Restricting the role of U.S. nuclear forces to the core role would make the threat of U.S. nuclear retaliation against nuclear aggression by others more credible by not diluting the mission with other, less credible, deterrent roles. Thus under such a clear policy, U.S. forces would exert larger leverage against nuclear proliferation by making it clear that such proliferation would result in intolerable risks to the proliferant.
- Restriction of U.S. nuclear weapons to the core function would go a long way to satisfy U.S. critics that the obligations under Article VI of the NPT are being met by decreasing the use of nuclear weapons as tools of international diplomacy and by permitting much more drastic reductions of nuclear forces than those inherent in present commitments. It could be viewed to meet obligations of Article VI as a step toward eventual elimination of nuclear weapons in a future era where possession of such weapons by other powers is no longer plausible.

If the core function remains the only justifiable role of U.S. nuclear weapons, the question continues to resurface whether this fact should be recognized by declaratory policy or merely be implemented by such actions as reduced numbers of nuclear weapons, elimination of tactical nuclear forces, reduced quick response readiness, improved survivability, and more robust command and control. Restricting the nuclear role to respond to nuclear threats only is de facto equivalent to a "no first use" policy which used to be advocated by the then Soviet Union, but has been withdrawn recently by Russia but is still proclaimed by China. A declaratory no first use policy has been so much used and abused in past propaganda by various nations that a similar proclamation by the United States would lack credibility. Moreover such a restriction could not be binding in case of war at any rate and therefore has limited operational significance in itself. Therefore a pragmatic shift in nuclear weapons deployments corresponding to the core function only is superior to a proclaimed policy.

The summary conclusion of these considerations is that the role of nuclear weapons to deter the use or threat of use of nuclear attack by other nations continues to have at least as much validity today as it had during the Cold War but that it should be their *only* mission. Although no strategy can assure that nuclear weapons will never by used again, such a highly limited role offers the maximum leverage toward avoidance of nuclear conflict and toward a worldwide decrease in nuclear weapons inventories. Deterrence of nonnuclear conflict should be separated as much as possible from the goal of deterrence of nuclear war.

APPENDIX E

Nuclear Weapons in Post-Cold War Deterrence

John C. Hopkins [1] *(retired) and Steven A. Maaranen, Los Alamos National Laboratory*

INTRODUCTION: A DEFINITION OF DETERRENCE

"The current questioning of nuclear deterrence implies something other than its withering away. There is no post-nuclear strategy. . . .[T]he nuclear instrument remains the central element in the defense of the nuclear powers."[2] Perhaps in today's environment, only a French analyst would be bold enough to make this argument publicly. There is a perception in the United States that nuclear weapons are a burdensome legacy of the Cold War that have lost their relevance and perhaps become counterproductive to American and international security. Deterrence, it is argued, is still vital to U.S. national security strategy, but perhaps it can be achieved by a combination of actions ranging from preventive diplomacy to military deterrence by means of modern conventional weaponry.

Few would disagree that conventional forces will play a greater part in deterrence in the future. But, in fact, as several thoughtful scholars have pointed out, the jury is still out on whether nuclear weapons can be dispensed with in the post-Cold War world.[3] Will conventional deterrence be enough, or will nuclear weapons continue to fill a unique niche? If so, what will be required to sustain an adequate American nuclear deterrent? Here we review the meaning of deterrence and the relative capabilities of nuclear and conventional forces to satisfy remaining deterrence needs for the United States for the foreseeable future. Admittedly, the decision to retain or reject nuclear weapons has become a complex problem with the end of the Cold War era, and there are arguments on both sides of the question that need to be taken into account. One thing that is certain is that there is now a high level of geopolitical uncertainty in the world. Much remains to be decided, both in the evolving relations among states

[1] The views expressed here are the authors' own and do not reflect those of the Department of Energy.

[2] Boyer, Yves. 1993. "Questioning Minimal Deterrence" in Serge Sur, ed., *Nuclear Deterrence: Problems and Perspectives in the 1990s*, pp. 101-104, United Nations, New York.

[3] See, for example, George H. Quester and Victor A. Utgoff, "No-First-Use and Nonproliferation: Redefining Extended Deterrence," *Washington Quarterly*, Vol. 17, no. 2, pp. 103-114, Spring 1994. The authors argue that not only nuclear weapons but also an implicit threat of nuclear first use will be required into the foreseeable future.

and in the responses of the United States to those developments, which will profoundly affect the need for deterrence strategies and nuclear weapons, and the wisdom of further nuclear disarmament. We believe that this uncertainty means proceeding cautiously; we conclude that nuclear weapons should retain an attenuated, but still important, role in U.S. national security policy for the time being.

Meaning of "Deterrence"

It is widely agreed today that "deterrence" as a term of art means preventing war either through fear of punishment or fear of defeat, or sometimes even through fear of undefined negative consequences. The word "deterrence" is derived from the Latin *de + terrere,* literally "to frighten from" or "to frighten away." Thus, fear is central to the original meaning of deterrence. The idea that vast, indiscriminate, and unacceptable damage would be inflicted in retaliation for aggression, as was associated with the prospect of the aerial bombing of open cities in the 1930s, or the employment of nuclear weapons since World War II, has long been central to the popular understanding of the term deterrence. That fear of defeat could be powerfully deterring, although a longstanding idea, has been less widely understood.

Nuclear deterrence both as a concept and as practical doctrine had several variations during the Cold War. These included the declared doctrine of massive retaliation, with its stark punitive threat and heavy reliance on the strategic nuclear air offensive. The mature U.S. nuclear strategy, which obtained from the 1960s until the collapse of the Soviet Union, was extended nuclear deterrence. Under this doctrine, the United States deterred direct attack upon itself with strategic nuclear forces, while extending protection to its Cold War allies and friends by promising to escalate a war to the nuclear level if they were in danger of defeat by Soviet-led forces, even if this entailed first use of nuclear weapons by the United States. Extended deterrence was achieved via the "seamless web" of conventional, theater, and strategic nuclear forces. Although this strategy did have an important conventional component, it ultimately depended on the threat of escalation to large-scale nuclear use. One interesting late variation on the theme of extended nuclear deterrence was that the fear that deterred could be a threat to destroy not urban-industrial areas per se but those items the opposing regime valued most. In the case of the Soviet Union, this was postulated to be the survival of the regime itself and its ability to preserve and perpetuate its control over the Soviet state. Another variation was that deterrence could be strengthened by posing the threat that the Soviets' strategic nuclear strike would not succeed because of the operation of U.S. strategic missile defenses, especially if linked to the prospect for subsequent punishment. It is also true that the idea of deterrence was subsumed within a system of mutual deterrence because of the deployment of large-scale Soviet nuclear forces in the 1950s and 1960s. However, neither mutuality nor parity is a necessary or inherent characteristic of the concept of deterrence.

The idea that effective deterrence could be accomplished by conventional forces alone began to emerge in the mid-1980s.[4] At that time, it was based in part on questions about the efficacy of extended nuclear deterrence in the presence of a massive and growing Soviet nuclear arsenal and in part on improving the conventional defense capabilities of the United States and NATO.

Deterrence vs. Dissuasion

Some uncertainty has emerged over the breadth of coverage of the term deterrence. The definition of deterrence is expanding to include more than military threats. Those who argue for a more expansive definition believe that deterrence should be modified to include all instruments of national security, not merely the threat of military force. These might include nonmilitary sanctions, foreign policy initiatives, economic measures, and positive inducements. On the other hand, some have persuasively argued that the term "dissuasion" should be used to refer to a broader spectrum of deterring actions than those narrowly associated with military deterrence. The word dissuasion derives from the Latin *dis + suadere,* "to advise or persuade against," and is clearly more comprehensive in meaning than deterrence.

It is certainly proper to think about national security in this encompassing way and to remember that military deterrence is but one component of national strategy. During the Cold War, for example, deterrence was by no means identical with containment, although nuclear deterrence played a constant, everpresent, and central role in making containment possible. Following the Cold War, U.S. objectives to promote peace and enlarge the influence of democracy have relied heavily on diplomacy and multilateral actions. Military deterrence remains an important U.S. tool, but nuclear weapons have now assumed an unstated (but powerful) supporting role, while American, allied, and multilateral conventional forces currently supply the bulk of day-to-day deterrence.

For the purpose of understanding deterrence in the post-Cold War era, however, it is better not to encumber analysis with too broad a definition of deterrence. Coming to terms with a concept of deterrence that spans punishment and defense, conventional and nuclear weapons, in a multinational setting, is a large enough task without making deterrence synonymous with national security policy or foreign policy.

NUCLEAR VS. CONVENTIONAL DETERRENCE

Nuclear Deterrence

Deterrence emerged in its modem form in the 1930s in the context of the newfound capability to attack the whole of an enemy's civilian population and

[4] Following on John Mearsheimer's examination of conventional deterrence in historical context and on the NATO-Warsaw Pact front (John J. Mearsheimer, Conventional Deterrence, Cornell University Press, Ithaca, N.Y., 1983).

civil infrastructure without first defeating its ground and naval forces. Airplanes and dirigibles were first used militarily in World War I and were employed to attack cities almost as soon as they were used for reconnaissance and attacks on the battlefield. Although the impact of these terror attacks was minor, the development of air power in the 1920s and 1930s allowed for the theories of Douhet and other military strategists. Their theory of strategic air warfare argued that air forces could by themselves conduct a strategic campaign against the vital elements of state power that could win a war, with little or no involvement by ground and naval forces.[5] The implications of this theory led to the emergence of the theory of deterrence as we know it.

In 1932 the British Prime Minister, Stanley Baldwin, reflected in horror on the theory of air attack as understood at that time: "I think it is well also for the man in the street to realize that there is no power on earth that can protect him from being bombed. Whatever people may tell him, the bomber will always get through. . . . " Accordingly, "[t]he only defense is in offense, which means that you have to kill more women and children more quickly than the enemy if you want to save yourselves."[6] On the basis of arguments like these, Britain engaged belatedly in the creation of a bomber-heavy air force that, it hoped, would serve to deter rather than actually fight a new world war.

As it turned out, both sides in World War II resorted early to urban bombing.[7] Conventional bombing could be defended against to some extent; the prospect of strategic conventional bombing did not deter war, nor was strategic bombing by itself able to secure the defeat of the opposing side (even though, eventually, the fire-bombing of Dresden and Tokyo, and the devastating thousand plane raids, approached nuclear strikes in the magnitude of damage they inflicted).

The lessons of World War II changed abruptly with Hiroshima and Nagasaki. Nuclear weapons clearly threatened damage that was unacceptable by any definition and would be almost impossible to defend against. Bernard Brodie, in his book *The Absolute Weapon,* in 1946, swiftly developed the theory of nuclear deterrence.[8]

Although nuclear weapons certainly played a major role in preventing major conflict during the Cold War, several problems emerged that increasingly cast doubt on the long-term utility of nuclear deterrence as the foundation of

[5] See, for example, David MacIsaacs, "Voices from the Central Blue: The Air Power Theorists," in Peter Paret, ed., Makers of Modern Strategy: From Machiavelli to the Nuclear Age, Princeton University Press, Princeton, N.J., 1986.

[6] Stanley Baldwin, House of Commons, Debates, 5th Series, Vol. 270, cols. 630-638.

[7] Urban bombing was driven, in part, by a desire to encourage popular unrest and to make the casualties a burden on the government and in part by the inability to accurately deliver bombs against key strategic targets such as military installations and war-supporting industries. This was a particular problem for the British after they moved to nighttime bombing to reduce their losses to German defenses.

[8] Brodie, Bernard. 1946. The Absolute Weapon: Atomic Power and World Order, Harcourt, Brace and Co., New York, pp. 74-83.

U.S. security policy. The first problem is related to the massive destructive power of nuclear weapons. In the early days, large-scale destruction was considered an advantage, since large targets, like cities, could be struck and destroyed using a small number of bombs delivered with poor accuracy. Some even spoke of widespread collateral effects as "bonus damage." But as interest grew in attacks that could be discriminating and limited, collateral damage needed to be reduced: the previous virtue of nuclear weapons became a limitation. Moreover, the deployment by the Soviet Union of its own nuclear forces quickly put in place a mutual deterrence relationship, where the United States had to persuasively establish the credibility of its use of nuclear weapons, both in retaliation and in a first-use mode, even though the expected strike from the Soviets would inflict enormous damage on the U.S. homeland. Partly because of these developments, the U.S. public came increasingly to question nuclear weapons as the basis for its security while America's European allies grew skeptical of the notion of extended deterrence.

The end of the Cold War raised more doubts. Maintaining a ready nuclear strike force when the putative enemy had become a potential partner and seemed to be on the path to democracy appeared unwarranted. Moreover, continuing to rely heavily and directly on nuclear forces could be seen as reinforcing the idea that nuclear weapons have utility in assuring a nation's security interests, an argument that undermines our desire to make these weapons unattractive to potential proliferant states.

Deterrence After the Cold War: Are Conventional Forces Enough?

In light of this questioning of nuclear deterrence, Les Aspin (when he was still chairman of the House Armed Services Committee) coalesced a good deal of thought in the defense community that holds that, since the collapse of the Soviet Union, the United States possesses overwhelming conventional power. For that reason, Aspin argued, the United States would benefit from the worldwide elimination of nuclear weapons, if it were possible.[9] At the same time, there is growing interest in the proposition that technology may now make it possible for the United States to achieve deterrence using conventional forces and weapons alone.[10]

A number of significant improvements have been made in the technology of conventional weapons in recent years, notably in accuracy, stealth, intelligence, and information support. Nor does the current theory of conventional deterrence require that conventional weapons be as powerful, destructive, or fearful as nuclear weapons. Rather, it is argued that sophisticated nonnuclear weapons can now hold at risk those assets most highly valued by

[9] Aspin, Rep. Les, Chairman, House Armed Services Committee, From Deterrence to Denuking: Dealing with Proliferation in the 1990s. Informal paper given at the Paul Nitze School of Advanced International Studies, February 18, 1992.

[10] For example, John A. Warden III, The Air Campaign: Planningfor Combat. Brassey's U.S., 1989.

potential aggressors, for example, the enemy's leaders' lives (viz., the apparent success of the U.S. strike on Libya), their military forces, key elements of the aggressor state's civil infrastructure (as in Iraq), and so on. Of course there are critics who believe that, although conventional strike technologies have come a long way in recent years, there are still many important capabilities that can effectively be protected against current and foreseeable conventional weapons. Desert Storm, they point out, was not characteristic in that it was fought after long and careful preparation, in open desert, with effective basing and logistical as well as political support nearby. The absence of these factors could reduce the potency of conventional weapons against different opponents, to say nothing of the fact that many of the units in operation against Iraq have now been disbanded.

Congressman Aspin and others have also noted that non-Western leaders may operate upon different systems of belief and with different perceptions of reality than those that are inherent in, and have apparently worked well as a part of, nuclear deterrence. Thus, they may not accurately perceive U.S. capabilities or resolve and may not be deterred by our nuclear weapons. This line of reasoning by no means proves that deterrence is impossible against such leaders. Even Saddam Hussein declined to use his stocks of chemical weapons against the United States and its allies, deterred by some combination of factors that may well have included the possibility of nuclear retaliation, by either the United States or Israel. If there is a risk that a foreign leader will misperceive the power and decisiveness of U.S. deterrence capabilities, it probably is greater with conventional forces than with nuclear. On the other hand, U.S. *resolve* to use conventional as opposed to nuclear weapons is probably much more palpable to such leaders.

An important concern with conventional deterrence is that it has not always worked in the past, and it is not obvious even now that conventional force can have deterrent power that approaches that of nuclear weapons (although, as noted, the threat to use overwhelming conventional force may be much more credible). Conventional war à *outrance* in World War I, terrible as it was, did not deter the leaders of Germany and Japan from embarking on World War II. On the other hand, deterrence seems to have worked vis-à-vis the Soviet Union and against the Warsaw Pact, where nuclear weapons were directly implicated, although it did not prevent war in Korea, Vietnam, or Iraq (even if it helped to deter escalation), where nuclear weapons were a distant and vague threat.

Conventional deterrence also must face a number of practical problems. First of all, it requires a large and credible power projection capability because of the simple facts of geography. The United States does have a vital interest in the configuration of power in Europe and Asia. Being able to intervene in these areas militarily in order to protect U.S. interests is hard and expensive, entailing a complex of naval, air, and ground forces and their support. To operate these forces effectively requires an overseas base network, which we are losing, and a forcible entry capability, which is doubly challenging especially if there are no local bases to rely on. And as the Bottom-Up Review reminded us, even in the

post-Cold War era, our security requirements demand a large standing force structure, and technological superiority, to assure the success of conventional campaigns.[11] Not surprisingly, such complex, capable, and large forces prove to be very costly.

Another concern is that it is probably impossible to assure complete and reliable nuclear disarmament. Nuclear weapons are easy to hide, and it has even proven difficult to demonstrate the existence of nuclear weapons development and production capabilities to the extent necessary to justify intervention. The credibility of a threat by the United States to deploy conventional forces alone against small powers that may possess weapons of mass destruction, perhaps including nuclear weapons, is problematic.

It is often argued that a U.S. move to conventional deterrence might induce nuclear disarmament and prevent nuclear proliferation, but it is also plausible that nuclear disarmament by these powers would encourage or reward nuclear proliferation by rogue states or by those states that now take shelter under the umbrellas of the nuclear powers. A lesson that some foreign leaders and militaries learned from the Gulf War was that nuclear weapons may be necessary in order to offset otherwise overwhelming U.S. conventional capabilities.[12]

Conclusion: Nuclear Weapons Remain a Necessary Component of U.S. Deterrence

In light of the international situation and U.S. security interests as we can now know them, it seems impossible to safely remove nuclear weapons from U.S. deterrence calculations for the next 15 to 20 years. There is too much uncertainty to see beyond that period. There have indeed been historic, unforeseeable changes in the world situation over the past decade, and so we should not rule out further changes that could allow for further nuclear disarmament compatible with U.S. security, or perhaps even the shift of nuclear weapons into some form of international control regime. But in the present state of turmoil and uncertainty, complete elimination of nuclear weapons, or their entire removal, would be very unwise.

DETERRENCE VIA NUCLEAR WEAPONS IN THE FUTURE

Current U.S. Nuclear Policy

The United States now maintains a reduced but survivable, highly capable nuclear force that is in a nearly ready but not hair-trigger status (intercontinental and submarine launched ballistic missiles have been detargeted, bombers have

[11] Bottom-Up Review: Analysis of Key DOD Assumptions, NSIAD-95-56, U.S. General Accounting Office, Washington, D.C., January 31, 1995.

[12] Garrity, Pat. 1994. Gulf War Lessons Learned, Center for National Security Studies, Los Alamos National Laboratory, Los Alamos, N. Mex.

been taken off day-to-day alert, and so on). The nuclear force is available in the event it is needed again to deter Russia (or China), neither of which is now an enemy state, but both of which have significant arsenals of weapons of mass destruction. The ability to upload a number of additional weapons is also retained as a hedge against an unexpected surge in Russian nuclear capabilities.[13] Moreover, nuclear weapons have not been ruled out as a response to the use of nuclear, chemical, or biological weapons against the United States, and we still deter aggression against U.S. forces and allies overseas in part with nuclear forces. Officially, by treaty, the United States renounces the use of nuclear weapons against nonnuclear states that are not allied with nuclear-armed states. In practice, the U.S. nuclear posture implicitly supplements deterrence of all military challenges to U.S. security interests, even from nonnuclear Third World states.

Future Options for Nuclear Deterrence

The option the authors prefer is a modest extension of current U.S. deterrence policy; the United States should express an intention to apply nuclear weapons specifically to the deterrence of nuclear challengers (nuclear weapons to deter the use of nuclear weapons). At the same time, the United States should not take steps (or make statements or pledges) that in practice would completely exclude nuclear retaliation from the calculations of nonnuclear states, especially so-called rogue states that may possess chemical or biological weapons and that may contemplate challenges to U.S. security. The nuclear forces of the nuclear weapons states could be smaller, with the relationships among those arsenals set by explicit or tacit agreement. The United States probably can safely eliminate specifically "tactical" nuclear weapons (the removal of weapons from Europe is a sensitive, symbolic political issue to be decided by the needs of the NATO states). Remaining U.S. nuclear weapons would be able (though not optimized) to serve both strategic and tactical deterrence. The United States would attempt to make its nuclear weapons fade into the background, in order not to weaken its hand unduly in advocating nonproliferation, but the nuclear force would remain in the shadows as a potent deterrent.

An alternative approach would be for the United States to retain adequate nuclear weapons capability and credibility to continue to support extended nuclear deterrence by means of a policy of flexible response. This would differ mostly in the retention of a more visible, but not necessarily larger, nuclear force and perhaps retention of a small, dedicated set of theater nuclear weapons. Such an alternative would be less attractive to the extent that it underscores our belief that nuclear weapons confer major national security benefits, and dilutes our nonproliferation activities.

An option widely explored is to move to a minimal or existential deterrence posture and policy, retaining either a very small alert nuclear force, an off-alert

[13] Department of Defense, Office of the Secretary of Defense, Nuclear Posture Review briefing, Washington, D.C., September 22, 1994.

force, or even dismantled forces that could be reactivated if the security situation demanded it. How small a nuclear force can be and still sustain effective deterrence is not known, but it is clear that for operational reasons it is difficult and expensive to go below some lower limit (e.g., at what level is it no longer technically or economically feasible to sustain a ballistic missile submarine fleet?). Nor is it likely that the United States will agree to reductions below those that the Russians would accept or that would bring the Chinese near nuclear parity. The proposal to dismantle all nuclear forces but retain them for a rainy day suffers from some of the same problems as complete nuclear disarmament. It adds to the concern that our capacity to restore these forces would atrophy while we continued to believe, perhaps inaccurately, that a nuclear deterrent force could readily be reconstituted. There is also the risk that a decision to reconstitute nuclear forces would exacerbate rather than stabilize a major crisis, either increasing the likelihood of war or dissuading the United States from rearming.

Finally, there has long been a constituency, given greater prominence by the end of the Cold War, that would like to see the United States and the other nuclear powers completely abandon nuclear weapons and denuclearize by agreement, with inspections and safeguards. Although there is some support for this proposal in the United States, it appears very unlikely, especially given the considerable interest of the French, British, Chinese, and Russians in continued reliance on their own nuclear forces. An alternative to denuclearization is to vastly reduce the number of nuclear weapons and to deliver the remaining weapons into the hands of an international peacekeeping organization, thereby retaining the utility of nuclear weapons in deterring all forms of war, while eliminating nuclear weapons as instruments of national policy. However, it is implausible that the nuclear states are prepared to relinquish their sovereignty and control over their ultimate security interests to an international body, as this proposal would require.

REQUIREMENTS FOR MAINTAINING NUCLEAR DETERRENCE

If the United States pursues a course of action that requires some continuing reliance on nuclear weapons, several technical and policy steps are essential. First and foremost, the United States should do its utmost to retain an adequate conventional force posture and superior conventional force technology. The more capable American conventional forces are, the less important nuclear weapons seem and the less the United States will need to rely on them. However, it is optimistic to believe that the United States will retain an adequate level of conventional forces, the determination to use them, and the ability to accept casualties that normally accompany conventional conflict, such that we could safely reduce our nuclear force, to an existential deterrent. Moreover, since conventional forces do not have the full deterrent power of nuclear weapons, they probably would not be acceptable to counter existing or future threats from nuclear weapons or other weapons of mass destruction.

Nevertheless, the United States should try to place nuclear weapons in the background, making it known that they are viewed only as a final guarantor of vital U.S. national interests (which include due regard for the security of U.S. allies and friends). The United States need seldom or never explicitly raise a nuclear threat, whereas it should continue to try to suppress nuclear proliferation. Although perhaps not as clear-cut as some would like, this would be a simple, understandable, and believable policy (both for the American people and for those to be deterred). We need not, indeed should not, provide a detailed description of exactly when, under what precise conditions, or against which targets nuclear weapons might be used. In sum, a nuclear force somewhat smaller than today's, in conjunction with powerful conventional forces, should be capable of achieving U.S. security objectives in the world we now foresee.

Some sort of hedge against an increasingly hostile international environment is also important. The Defense Department advocates retaining some nuclear forces in reserve for a nuclear hedge. In addition, the United States should retain a capability to design, produce, and maintain nuclear weapons, although this, too, should be kept only as large as is necessary to meet national needs and should also be moved into the background. The need to do so is being addressed today under the rubric of stockpile stewardship. This program includes the maintenance of a much smaller stockpile than in the past, plus retention of the technical expertise necessary to understand and support the current stockpile. The Department of Energy, with the cooperation of the nuclear weapons complex, is developing a program that tries to fulfill these requirements.

No one knows whether there will ever be another requirement for new, or different, nuclear weapons. The present weapons, which were designed to address Cold War threats, certainly are not what one would design today for the 21 st century. Be that as it may, in the world that prevails, it is only prudent that the United States retain some capability, across the board, to address the concerns or problems of the arsenal as they arise.

If the world situation continues to relax, the role of nuclear weapons in U.S. security could again be reviewed and the nature of the nuclear complex required to support it reconsidered. But we should always be cautious with those forces that are the core of our deterrence policy. In this regard it is useful to remember the lesson of the British Ten-Year Rule. Following the allied victory in World War I and the Versailles Treaty, the British Cabinet decided that defense planning could proceed on the assumption that a major war would not occur for the next 10 years. This was a safe assumption at the time, which allowed for significant savings during the interwar years. But the Ten-Year Rule was then allowed to become rolling guidance: the need to begin reconstructing British military forces was constantly pushed at least 10 years into the future. When the new threat did begin to emerge in the early 1930s, the British were perilously tardy in responding. They were too late to deter war, and almost too late to avoid defeat.

APPENDIX F

Notes on the "Band" Between "Existential Deterrence" and the Actual Use of Force

Helmut Sonnenfeldt, Brookings Institution

1. Deterrence—used here roughly as defined in Sy Deitchman's memorandum of February 22, 1995, to the Naval Studies Board deterrence study participants—has been practiced in various forms by states and other social organizations for much of recorded history. In biblical times, God was thought to have an infinite capacity for punishment (and reward). The record suggests that potential sinners frequently were "deterred" from doing what temptation, greed, and other motivations and impulses of mortal man might have led them to do without fear of the consequences. But, starting with Adam and Eve, there is a long and melancholy record of deterrence failing.

   God was also known to employ "compellence," both on the children of Israel and on their tormentors, notably when he visited the 10 plagues on the Egyptians to force them to release the Israelites from bondage. (Some of those plagues would nowadays fall into the category of biological warfare.) The Bible also records instances when entire populations were wiped out or forced into exile in the course of wars. The Babylonians may well have calculated that the example of physically removing the children of Israel from their homeland would be a lesson to other people who might resist their imperial ambitions.

   Indeed, the notion of making an example of sinners or resisters by inflicting severe punishment upon them has been a means of maintaining "law and order" within social groups since time immemorial and remains so today. Over time, states or their predecessors have sought ways to provide some middle ground between the threat, or example, of severe punishment and its actual employment, including gradations of punitive action, e.g., beginning with a modest fine, as well as various forms of rewards for good, and especially for compliant, behavior. The power of a state to inflict capital punishment, albeit nowadays often constrained by complex procedural safeguards, may be seen as an effort to establish an "existential deterrence" to heinous crimes.
2. Modem states have tried to approach the problems of crime by searching for the root causes of antisocial or criminal behavior and counteracting them by various kinds of reforms, medical treatment, schooling, and so on. But except for a few intensely idealistic communities, society has ultimately relied on the threat and example of punishment to ensure domestic tranquility.
3. Interstate relations have always suffered from the absence of a supreme secular authority operating by some agreed body of universally applicable law upheld either by the consent of states or by the threat of punitive action which

confronts potential predators with the prospect of pain sufficient to restrain them from breaking the peace. Even with a vast body of international conventions and a U.N. Security Council endowed with powers greater than any wielded by any previous international institution, states ultimately rely on their own ability to protect their interests and to dissuade those who would attempt to damage those interests from doing so by the threat of punishment greater than any gain that might be achieved. As noted, this principle has been far from infallible— and not necessarily because those who lead states are "evil" but because state interests may clash and governments seek by one means or another to enhance theirs, if necessary at the expense of those of another state.

4. In the prenuclear age, rulers of states (and their predecessor entities) were frequently deterred from seeking to achieve gains at the expense of other states by fear of the cost. Instead, they sought their goals by negotiation, dynastic marriages, and other ways short of recourse to arms. But frequently they did have recourse to arms, especially if the other state or states were thought to be weaker. Often this involved miscalculations and the enterprise was suspended; or perhaps a deal was made. The costs incurred were frequently temporary: destruction could be repaired; populations could be replenished; debts could be paid, covered by loans, or ignored. Occasionally, of course, damage, whether as a result of gains achieved or of losses suffered or of merely a standoff, could be severe and long lasting (e.g., the Thirty Years' War and World Wars I and II). Sometimes states ceased to exist or lost their independence. Major changes in the international system could result. But over time the effects of even the more cataclysmic conflicts and resulting transformations in the state system would be absorbed and surmounted.
5. In the last 150 years or so, the prompt damage and injury inflicted by weapons of war greatly increased; cumulative damage and injury extended well beyond the military forces of warring parties; weapons could be delivered against military and civilian targets over ever-increasing distances and with ever-greater rapidity. Combined with ever-more effective means of conflict, like blockades and displacements and destruction of civilian populations, prenuclear conflicts in the 20th century came to resemble the most destructive conflicts in the Middle Ages and antiquity. Many people came to conclude in the early 20th century, especially after World War I, that modern war was not worth any conceivable gain. As it turned out, the deterrent effect of war itself was far from universal. Indeed, the destructiveness of modern prenuclear war was exploited by the most ruthless political movements and leaders between the world wars to advance their ambitions. The famous Leni Riefenstahl movie "Triumph of the Will" was designed both to imbue the German public with a sense of destiny and to intimidate the rest of Europe into meeting German demands and to persuade it that resistance would be senseless should Germany use force to impose them.

The British sought at the time to acquire some room for maneuver by speeding rearmament, guaranteeing Poland, and, half-heartedly, trying to persuade the Soviet Union to join an anti-Hitler front. Hitler trumped the latter and moved against Poland while Britain and France still had no means of directly aiding Poland other than declaring general war ill prepared. He and some of his advisors thought the West would remain deterred. They miscalculated.

After Poland's conquest, Hitler engaged in what 20 years later would have been called "intrawar deterrence"; i.e., he sought to persuade the British and French that escalation of the war to redeem a commitment to a Poland that by then had disappeared risked the massive destruction of modern war. He miscalculated again. The only "intrawar deterrence" that worked during World War II (and again in the Gulf War) was that both sides abstained from using their chemical arsenals against each other. (The Germans, of course, used theirs in the extermination camps, and the Iraqis used theirs domestically and against Iran.)

6. The advent of the nuclear age, with the demonstrated immediate and anticipated future effects of atomic weapons, led to a far more systematic development of the theory and practice of deterrence than had existed before. As it happened, the advent of the nuclear age coincided with that of the Cold War, a largely bipolar confrontation that was to last almost half a century.
7. The overriding concern of American policy during the Cold War was to avoid all-out war while at the same time preventing Soviet political and territorial gains, particularly in Europe. In the early years of the Cold War, with Soviet conventional forces in Central and Eastern Europe thought to be greatly superior to Western forces in Germany and Western Europe, the United States relied on its atomic superiority well into the 1950s to deter Soviet encroachments. This threat of massive retaliation "at places and times of our choosing" was buttressed by a series of alliances. In the case of NATO, the alliance was transformed into an integrated multinational military force which over time became increasingly formidable. In Germany it was deployed along the east-west dividing line as well as in depth (until France in 1967 precluded stationed forces on its soil). These dispositions were intended both to deter the Soviets and to reassure the allies, allowing them, with U.S. aid, to reconstruct their societies and economies. "Reassurance" became a crucial adjunct of deterrence, which itself therefore came to include the concept of "extended deterrence." This extension was the logical consequence of the geographic remoteness of the United States from regions it had concluded fell within its area of interests.
8. If there ever was any serious thought in the West of liberating Soviet-dominated Eastern Europe, it was dissipated by Moscow's acquisition of a nuclear arsenal of its own. Deterrence thus began to operate in both directions;

in the late 1950s "massive retaliation" lost credibility (would the United States trade New York for Hamburg, and so on?) and, within the requirements of "extended deterrence," gradually came to be replaced by "flexible response." This was in turn followed by major Soviet forward deployments of shorterrange nuclear weapons. Although there was much controversy about how "stable" these arrangements were—Germans became especially sensitive about nuclear deployments on or near their soil—the system in fact kept Europe free of war until the Soviet collapse.

9. The mutual deterrence system was less stable outside Europe: major wars occurred in Korea (clearly encouraged and supported by the Soviets), Vietnam (with Soviet involvement more ambiguous), and with lesser intensity elsewhere. Moscow, as it were, hurdled the containment barriers. The United States did not fare well in several of these conflicts, but the damage to its interests was far from fatal. Moscow and "international Communism" appeared to be the gainer, but in fact the problems and costs of managing a far-flung and disparate pseudoempire contributed to the eventual demise of the Soviet Union itself.

   More pertinent perhaps, the policies of the Reagan administration of contesting Soviet footholds around the world more actively and of forcing the pace of the U.S. military buildup while avoiding, by instinct as much as calculus, a breach of mutual deterrence rules eventually led Gorbachev to seek relief by negotiation and attempts to reform the Soviet system. Crucially in the circumstances, the U.S. policy of pressure and cost raising came to be accompanied by an embrace of Gorbachev as the instrument for dismantling the Cold War and, along with it, the Soviet empire. The Soviet side of the mutual deterrence equation had failed to prevent the West from substantially achieving its political aims without war.

10. Deterrence in the post-Cold War world is not a two-sided game. Nor, with exceptions noted below, are there frontlines as clearly defined as those of the Cold War which ran through the center of Europe and around the periphery of the old Soviet Union. It is already clear that the panoply of U.S. military power, although impressive, is not capable by its mere, but shrinking, existence of deterring military conflicts across international frontiers or within them. This may in large part be because the United States is not prepared to employ its forces on a large scale or even credibly to threaten their use in many of the cases that have so far arisen. The demonstration effect of the Gulf War may deter large-scale aggression like that by Iraq against Kuwait, but that effect may fade even in strategically important areas like the Gulf unless there is a visible U.S. military presence in or near the region. In Bosnia the threat of NATO—largely U.S.—air power initially had an inhibiting effect on Serb violations of the no-fly and heavy-weapons exclusion zones. But that ended when the highly restrictive tactics of its use and the cumbersome nature of NATO/U.N. command arrangements became apparent to the Serbs. Moreover, NATO governments

with forces on the ground were always reluctant to use air power because of fears of Serb retaliation, such as hostage taking.

11. The United States has not so far been able to clarify, i.e., achieve political consensus, as to where and under what conditions it would be prepared to intervene militarily. The Bottom-up Review identified two potential such cases—the "major regional conflicts" in the Gulf and Korea. That has not prevented North Korea and Iraq—and to a lesser extent Iran-from testing U.S. reactions to various military moves. In response, the United States beefed up its presence in the Gulf and reinforced its forces in Korea.

    As significant, in the case of North Korea, the threat of an emerging nuclear capability and the formidable, if vulnerable, North Korean conventional forces arrayed along the 38th parallel, led the United States to seek a negotiated resolution of the nuclear issue. For the time being, the Korean peninsula may represent the closest instance of two-sided mutual deterrence in the post-Cold War world (the Indian subcontinent may be another such case, though not directly involving the United States). This may allow room for some negotiated compromises on the nuclear and other issues, especially those between the North and the South. But in view of the nature of the North Korean regime and its inherent weakness, the situation is likely to remain fragile. If the Soviet collapse has any precedential significance, mutual deterrence may prevent war but may not preclude the collapse of one of the parties—which in the case of North Korea may not be as gentle as that of the Soviet Union and all but one of its satellites.

12. As has frequently been pointed out, deterrence chiefly affects the *intentions* of decision makers, that is, their calculus of whether the risks and potential costs of a course of action are worth the gains that might be achieved. The United States will continue to have formidable military forces of all kinds, even though substantially smaller than during the Cold War. But their deterrent effect on others who might be inclined or impelled toward aggrandizing policies will be less a result of their size and destructive capacity than of judgments concerning the readiness of the United States actually to employ those forces either alone or in coalitions.

    The resulting uncertainties can lead to at least two dangers: (1) that a country may make a move which the United States then decides is sufficiently detrimental to its interests to require a military riposte, and (2) that the United States, concerned that its credibility is so much in question, decides that it must undertake a demonstrative military move which will then be interpreted as provocative and induce overt military action by another party. There is no easy way out of this kind of dilemma. It is, however, not likely to arise in too many instances until a major power appears on the scene determined to assert hegemony, or territorial control, over adjacent areas which the United States then deems to be of importance to its security. The most likely foreseeable case of this sort is a future China with ambitions to clearly establish control of the

South China Sea. Other nearby states will be even more concerned than the United States in this instance.

This may produce a de facto coalition which would either seek to resist Chinese ambitions or to work out a *modus vivendi.* This particular example is of contemporaneous interest, since China is clearly already asserting claims to the Spratlys and its surrounding wider ocean areas. But it still lacks the military forces to prevent serious challenges from other claimants. The United States has been neutral about the conflicting claims but recently asserted its interest by asserting rights of passage through the contested waters and insisting on peaceful settlement of claims. The United States may have to become more explicit in asserting its position and will need periodically to exercise its asserted maritime rights to avoid later misunderstandings and potential clashes with a by-then much stronger China.

13. For a while, in the Bush administration, it appeared that the United States would look to the United Nations as an effective instrument to enhance deterrence of local aggressions and serious indigenous conflicts by the interposition of international forces in critical situations. Although the Security Council, with U.S. support, has continued to issue decisions along these lines, the United States has meanwhile severely restricted its own participation in such ventures. But without U.S. participation, U.N. effectiveness, as peace maker or enforcer, is limited. As matters stand, the United States will participate only if it (or SACEUR) is in clear command of the operations involved. But this will not be acceptable to key Security Council members except in rare cases which in practice will be coterminous with those in which the United States is prepared to intervene unilaterally, e.g., at present in the Gulf and Korea. At some less inflamed time, the United States might reconsider possible U.N. activities which could lessen the risk or severity of conflicts and which it could support.
14. Elements of *nuclear* deterrence will continue between Russia and the United States because of the size of their respective nuclear arsenals and the uncertainties of Russia's political evolution. But for now the prospects for direct military engagements between the United States and Russia are remote. The United States is not prepared to challenge Russian assertions of special rights, including military ones, in the "near abroad." The effectiveness of "extended deterrence" of Russian military actions and pressures outside the former Soviet space will remain moot at least for some time to come. Except as noted below, there is thus strictly speaking no "band" between existential deterrence and a shooting war between the two major nuclear powers. But there is a strong American interest in Russia's transformation into a democratic, constitutionally governed state with the role of the military establishment circumscribed. U.S. capacity to influence developments along these directions in Russia is modest, but conceptually the effort to do so is the equivalent of filling the area between deterrence and conflict.

15. The situation with respect to the Baltic states and Ukraine poses more difficult problems. Neither the United States nor the West generally is prepared to provide these countries with iron-clad security guarantees. In a military sense, deterrence thus does not operate, except to the extent that Russian leaders may think there is some possibility of military intervention from the West in the event of Russian incursions or brazen interference in domestic affairs or other efforts of coercion. The "existential deterrence" that may operate is the almost certain political and economic isolation that Russia would suffer. There could also be internal Russian protest and opposition against a leadership that moved against one or more of the countries cited. That leadership would also have to consider the difficulties and direct costs of actually attempting to exercise physical control in these countries.

    The United States and others can further intensify relations with the Baltic states and Ukraine so that they increasingly tend toward de facto membership in Western institutions. This may create incentives for Russia to pursue constructive and beneficial rather than antagonistic and coercive relationships with these countries. The West should also provide support for resolution of actual disputes between Russia and these countries (e.g., on minority rights and on residual military matters stemming from the Soviet period). Such actions would tend to buttress their security by widening the scope of "political deterrence."

16. With time the United States will face the appearance of new major powers. These would be regional in the first instance but would almost certainly acquire some military and other capabilities that could also threaten U.S. interests up to and including the United States itself. In such circumstances the United States will find itself reverting to a basic deterrent posture, i.e., one that would threaten punishment for damage to U.S. interests up to and including upon the homeland of the perpetrator. Nuclear weapons would almost certainly come into play only in the event that nuclear threats were directed against the United States or one of its allies. Threats involving chemical and biological warfare would probably be countered with threats of retribution by conventional means, although in severe cases threats of nuclear retaliation could not be ruled out. Air defenses against delivery systems capable of reaching the United States should augment the threat of punishment, if necessary by amending the Antiballistic Missile Treaty. Passive defenses could play some role as reassurance. (Note: Chemical and biological warfare threats merge with terrorist dangers and involve issues of domestic security policy.)

    Containment strategies, including the use of existing alliances and newly formed coalitions, would probably be the most effective and affordable instruments to avoid or postpone direct military conflicts. But in some instances this may be easier said than done because even close allies may have different assessments of the seriousness of a threat or of the most effective ways to deal with it. (Note: Japan and much of Europe at present reject economic sanctions against Iran; Japan and South Korea had grave doubts about the use of

sanctions, let alone military actions, against North Korea over the nuclear issue.)

17. Containment strategies for some time to come will be regional in scope rather than global, as was the case with the Soviet Union. In view of the uncertain war-preventing role of "existential deterrence," various forms of "extended deterrence" will be required to give substance to containment strategies. "Forward" stationing of forces, as noted earlier, will be necessary in particularly critical situations such as those in Korea and the Gulf. Some forward stationing, as well as forward operations of forces based in the United States, will be required as forms of presence designed to inhibit the development of potential into actual threats. The relatively large stationed U.S. forces remaining in Europe may be seen as this kind of presence. But these forces, which perform important political functions assuring a significant U.S. role in a future European security "architecture," may not be optimally positioned to cope with threats that may arise in other parts of the world. Lift and other support requirements to deploy them to places of more direct relevance to an emerging threat may be as demanding as for forces normally located in the United States.

    Some "show of force" or "showing the flag" operations may have greater psychological effect if they are mounted from the United States. More generally, forces and equipment forward deployed for specific contingencies cannot be as readily utilized elsewhere as those maintained in the United States or at "crisis-neutral" locations. Naval and air forces usable for long-range bombardment of land targets are inherently more flexible than land forces and can be permanently based in facilities remote from potential areas of conflict in which U.S. interests might become engaged. They should, however, be visibly exercised.

    Measures to augment "existential deterrence" should include diplomacy and various inducements for parties involved to resolve issues giving rise to friction, crises, and conflict. Agreements can be internationally policed and, if necessary, enforced. If so, based on unfortunate experience in these matters, mandates and rules of engagement for international enforcement should be clearly established and forces adequate to the task provided.

    Apart from problems of command, it is generally not advisable for American forces to participate directly in such missions unless there is a credibly definable American interest in a particular situation. Although it is desirable for U.S. forces to be trained, physically and psychologically, for military operations that have no "enemy"—although there would be "violators" of agreements subject to countermeasures—or a victor in the traditional sense, the United States must avoid dissipating its forces or participating in too many operations with ambiguous outcomes. Both undermine the credibility of deterrence, existential or extended.

18. It should also be noted that not all aspiring regional powers necessarily seek to encroach on U.S. interests. Their aspirations, and associated military

programs, may be principally intended to balance, deter, or threaten rival regional powers. In such situations the United States may elect neutrality, good offices to resolve differences and limit arms races, or tilting toward the party less likely at some point to collide with U.S. interests. As regards the last of these options, the United States will need to take care not to become so deeply tied to one of the parties in a two-party regional rivalry that it loses room for maneuver or encourages that party to assume the United States will support it militarily in a possible war. (The United States may choose to do so but ordinarily should not give so much support in advance that its preferred party starts the war itself. This consideration should also limit the types and quantities of military equipment the United States might supply to the preferred party.)

19. *A tentative conclusion:* In the post-Cold War world, "existential deterrence," i.e., the sheer weight of American power, will not prevent many conflicts nor even threats or actions against American interests. If a threat is perceived, more directly applicable and visible force will be required to deter and contain it. It will be desirable to undertake such countermeasures in association with other states, but this may often be difficult because of differing threat assessments and judgments as to the most effective means to be used. There will be numerous aspiring powers over time, including some with at least a rudimentary ability to injure the continental United States. In the latter case, a Cold War-type of deterrence, combined with defenses and containment strategies, may be the most desirable option. When aspiring powers are regional rivals of each other, it is in the U.S. interest to help prevent war; in so doing the United States should not tilt so far toward one of the parties as to run the risk of getting dragged in or of encouraging that party to start a war.

APPENDIX G.1

Special Challenges in Extending Deterrence in the New Era

Paul K Davis, Rand

A PROVOCATIVE PREMISE

This paper proceeds from the following premise:

• *A principal* strategic issue for the developed world is how to deter invasion or coercion of weak and medium-strong states when the security of the threatened states is important but is not a "vital" national interest of the powers that might be protectors.

Deterring attacks on the United States, Western Europe, South Korea, Kuwait, and Saudi Arabia will continue to be a key national security objective. Much more controversial, however, is the notion of attempting to deter threats to Poland, Ukraine, the Baltic states, Taiwan, or a unified Korea. The potential aggressors would be Russia and China, although we hope that both countries will instead travel down more enlightened paths in the decades ahead.

On the one hand, it is obvious that the United States would prefer to deter aggression against any of these states (as well as future Bosnias). On the other hand, none of them is a clearly vital national interest. As a result, it is difficult to formulate and implement any strategy. Indeed, many people believe that entertaining the notion of a deterrent strategy smacks of strategic overextension and becoming a world policeman. This paper, however, accepts the premise as a sober expression of fact.

TOWARD A STRATEGY FOR DETERRING THREATS TO NON-VITAL INTERESTS

Factors Contributing to Deterrence

Suppose that the United States wanted a deterrent strategy for dealing with threats to important but non-vital interests. What might it look like? Standard defense planning involving vital regional interests tends to focus on military capabilities that could with some confidence defeat aggression if it occurred (deterrence by denial). In more difficult cases involving non-vital interests, however, we will need to reduce our standards and rely on a wide range of influence factors, some of them distinctly squishy and political. Figure G. 1.1 summarizes these factors in a "success tree" for deterrence: the factors below contribute to the successful result at the top (deterrence).

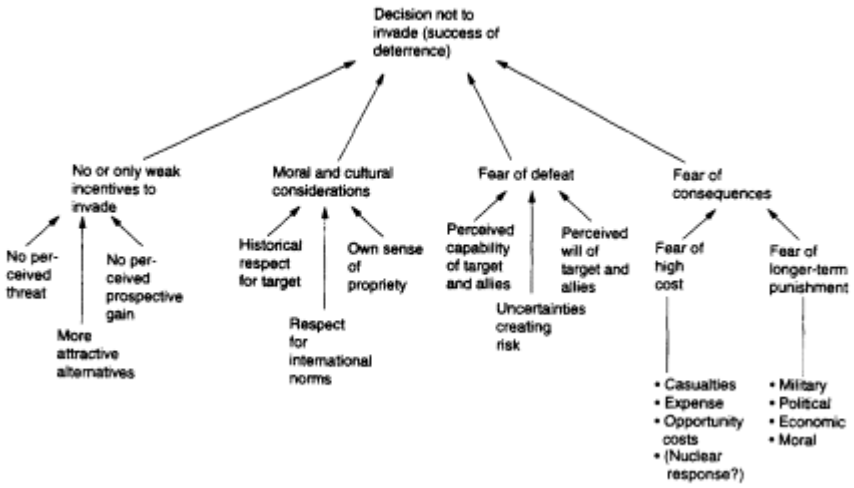

Figure G.1.1 Factors contributing to deterrence.

Although the tree happens to have emerged from using decision modeling methods to think about crises, conflicts, and deterrence, none of the factors in the tree is truly remarkable. The tree could have been assembled by merely combining ideas from a dozen texts and articles in international relations. However, viewing deterrence as influencing human beings operating in politically rich contexts has the effect of increasing the weight one puts on several of the factors, which are often mentioned in lip service and then discarded. Moving from left to right, we see that deterrence is served if the would-be aggressor has no compelling incentives to invade and if there are moral and cultural considerations that argue against invasion. These factors may remind us that Canadians do not lose sleep worrying about invasion by the United States; nor do the Low countries in Europe currently worry about historical enemies repeating their deeds. Moving rightward again in Figure G. 1.1, deterrence is served if there is fear of military defeat in an invasion attempt and if there is fear of other consequences even if "success" is likely. At the next level of detail there are some important distinctions, but what matters most to this discussion is recognizing that we must be *serious* about all of the factors, not merely list them and then move on to the more straightforward of military issues. Why? Because both history and analysis indicate that depending on extended deterrence by denial (being able to defeat invasion) to protect non-vital interests is probably a losing proposition. In some cases, deterrence by denial is not even militarily feasible. In other cases, it is politically very questionable because it requires prompt and decisive multilateral actions under ambiguous circumstances.

Possible Suggestions for Weak and Medium-Strength States

One way to view the situation is to imagine ourselves giving advice to a generic weak or medium-strength state concerned about a strong and potentially troublesome neighbor. Motivated primarily by issues highlighted in Figure G. 1. 1, Table G. 1.1 summarizes possible suggestions. A few of the items merit elaboration.

Minimizing incentives for invasion (item 1) includes avoiding excuses such as mistreatment of ethnic minorities for whom the neighboring strong country sees a sense of responsibility (either real or contrived during an internal political crisis). Nurturing moral attitudes and cultural ties (item 2) includes the notion of identifying and weeding out "dangerous ideas" such as hatred-perpetuating stereotypes or distortions of history found in some countries' educational materials (e.g., Arab materials referencing Israel, Japanese materials misrepresenting as benign the brutal Japanese imperialism in Korea, materials claiming that recent events in Bosnia were "inevitable," or, less relevant here, American materials ignoring the mistreatment of Native Americans).

Maintaining a competent defense (item 3) is, of course, highly important if feasible, which it is not, for example, for Latvia. This, however, involves not just having an army, but also avoiding operational vulnerabilities that would make a quick and successful attack feasible. Today, a defender should worry about everything from special operations forces to information warfare. Operational arms control (item 4) has considerable potential because relatively straightforward measures can greatly reduce opportunities for surprise attack. It may also be that there will be increased interest in total force structures, including support, that lack credible offensive capability for theater-level campaigns, although this is a complex subject and it is futile to try to label weapons as offensive or defensive. In addition to all of these, weak or medium-strong states are well advised to seek protectors and, as necessary, to make their commitment credible and permit and even encourage prepositioning or forward deployment of forces. Countries should be discouraged from believing that the United States or any other protector can keep its forces "over the horizon" and quickly deploy them when needed. The last item in Table G. 1.1 deals with something listed ambivalently in Figure G. 1.1—nuclear weapons. By and large, dependence on nuclear weapons for deterrence is a dangerous game for weak countries. Such weapons assure that the countries are targeted, and the weapons might invite what would be alleged to be preemption or preventive war and are not obviously good deterrents anyway, except when nations appear willing to commit suicide rather than be occupied. Israel appears to be the exception here because it lacks strategic depth and is surrounded by large countries with a depth of religious and ethnic enmity that goes beyond normal rationality.

Table G.1.1 Possible Advice to Weak or Medium-Strong States

1. Minimize incentives	"Respect" your neighbor for invasion or coercion.
	Do not threaten its major interests or permit provocative actions involving minorities
2. Nurture moral attitudes and cultural ties	Identify and weed out "dangerous ideas."
	Increase interdependence and normal contacts.
	Cooperate in all-inclusive regional security frameworks reiterating high principles.
	Cooperate in high-minded joint activities.
3. If feasible, maintain a competent defense, even if moderate.	Focus on precluding quick and easy invasions.
	Avoid "holes," special vulnerabilities to coups de main,
	Consider defense-in-depth methods.
	Have strong protector(s); permit forward deployment of forces or infrastructure.
	Move quickly to high readiness in a crisis.
4. Use operational arms control wisely	Seek measures constraining neighbor from posturing forces for a surprise attack.
	Treat violation of such measures as strong evidence of hostile intent.
	Encourage other *sensible* confidence-and security building measures, but nothing that degrades essential readiness in crisis.
5. Consider nonoffensive defenses.	Judge "offensiveness" on total posture, including logistics for long-distance force projection
6. Seek regional and other security protections.	Seek a combination of bilateral and multilateral frameworks with complementary virtues.
7. See through the allure of nuclear weapons.	Recognize that nuclear weapons would guarantee being targeted and would be unlikely to be survivable in a crisis
	Recognize that nuclear weapons are useful primarily for deterring nuclear weapons.

Possible Suggestions for U.S. Security Planning

What is the complement of Table G. 1.1 for countries like the United States that would like to "extend" deterrence in politically and economically feasible ways? Table G. 1.2 suggests some principles. Many of them are by no means trivial. Even item 1 involves the controversial issue of NATO expansion but

Table G.1.2 Generic Suggestions for Extending Deterrence to Non-Vital Interests

1. Support a broad range of regional stability-enhancing activities.	• Participate in both bilateral and multilateral agreements (e.g., NATO expansion). • Serve as a broker (e.g., Middle East). • Maintain regional military presence (e.g., Kuwait, Korea, Japan).
2. Recognize and express interests clearly.	• Repeat U.N. principles regularly and unequivocally. • Maintain forward-deployed forces and infrastructure where feasible. • Create formal security ties to enhance credibility and resolve (e.g., NATO expansion). • Be more rather than less heavy handed in "signaling" aggressive, risk taking adversaries; avoid compromise actions that will be interpreted as weakness and irresoluteness (as were, e.g., minor naval exercises in the Gulf during July 1990).
3. Prepare politically and militarily for prompt intervention in a crisis.	• Conduct peacetime games posing predictable dilemmas; conduct high-level games given strategic warning; include political figures and allies to increase the likelihood of decisiveness in a crisis. • Emphasize forward presence in a crisis. • Deter use of weapons of mass destruction (WMD) by credible threats of massive conventional retaliation; prepare to operate in WMD environment. • Conduct joint exercises and training for effective, prompt intervention. • Fine-tune intervention capabilities to supplement a target state's capabilities. • Prepare for militarily effective short-warning D-Day intervention with long-range bombers, carrier battle groups (CVBGs), and in-place forces.
4. Encourage operational arms control and asymmetric nonoffensive defense.	• Seek measures reducing the feasibility of surprise attack and increasing the likelihood of decisive political decisions by the target state, the United States, and other nations.
5. Find alternatives to current U.N. mechanisms for crisis intervention.	• Recognize that current U.N. mechanisms are inadequate for a mission of immediate deterrence. • Develop other mechanisms of legitimized, prompt, and competent action.
6. Create an expectation of sure and swift long-term punishment for aggression, whether or not the agression is successful.	• Seek regional security frameworks *requiring* prompt political and economic sanctions making aggressors pariah states. • Develop and exercise credible multilateral military options for selective strategic punishment (e.g., destruction of navy or air force, selected countervalue attacks). • Develop and exercise multilateral military capabilities for sanction enforcement (embargoes, etc.), even if leaky.

would perhaps go farther to envisage arrangements involving the Baltic states, Ukraine, and Taiwan among others. Item 2 recognizes that a major cause of failure for immediate deterrence in the past has been the failure to recognize and express interests clearly—clearly enough to be understood by adversaries who do not reason in the same "pragmatic" and status-quo-oriented way that we and our allies do and who respect power and firmness, not cosmetic compromise signals (e.g., a small-scale naval exercise without serious warfighting capability) that suggest lack of resolve and commitment.

The admonition to prepare for prompt intervention may sound obvious, but it involves more than building military capabilities. Democracies such as the United States have great difficulty reacting decisively under ambiguous circumstances. To mitigate these problems, the National Security Council might regularly conduct strategic crisis games that would serve both to prepare and to educate. Given strategic warning of a crisis, such games could be called as a matter of operational political-military doctrine—as a matter of responsibility. If game participants included appropriate members of Congress and appropriate allies, then working through the strategic dilemmas might go far to encourage unified prompt and decisive action early enough for immediate deterrence to work. *Without such a doctrine of preparation, it seems likely that the United States will often be ineffective early in a crisis, when deterrence could work.* This conclusion is the result of studies of past crises and the use of decision modeling to better understand the dilemmas felt by political leaders. The theory of immediate deterrence is much easier than its practice.

Another feature of preparing for prompt intervention includes dealing in advance with the weapons of mass destruction (WMD) problem. The United States needs a firm and frightening declaratory policy, backed up by operational capabilities, to deter use of WMD. In addition, the United States needs significant and even substantial active and passive capabilities for missile defense. Although this is already a national priority, it is also very difficult to achieve technically. A major factor in any real-world capability is likely to be early deployment, early commitment (in part for deterrence and in part to assure our own resolve), and early counterforce attacks on adversary systems, perhaps surprise preemptive attacks. Envisaging this is sobering given traditional American attitudes and behaviors. *Without an ability to deter and, if necessary, defeat WMD, the United States is likely to be self-deterred with respect to protecting less than vital interests, especially if not already forward deployed and committed.*

Continuing in item 3 of Table G.1.2, any realistic assessment of prompt intervention capability quickly demonstrates that the United States should be prepared to assure that the earliest-arriving capabilities are those tailored to supplement the defenses of the target state. This might include capability for DDay Air Force and Navy attacks on ground forces, air forces, and naval forces (including small boats used for special operations units). It might also include a capability for establishing information dominance, which implies not only

superb reconnaissance and surveillance, but also the requisite communications with allies.

Arms control appears prominently in this list, as it does in Table G. 1.1. The basic principle is that deterrence can be greatly enhanced by making surprise attacks difficult, because aggressors typically want a quick, easy, and low-risk victory. In practice, surprise attacks have seldom been a surprise; instead, they have been the consequence of exploiting ambiguous circumstances. Arms control can reduce opportunities for such strategies by, for example, prohibiting the massing of potentially aggressive forces near a border. Actions in violation of the agreement would not be particularly ambiguous; they would indicate hostile *intentions* and would be more likely to trigger appropriate responses.

Unfortunately, arms control measures can also be counterproductive, especially measures proposed to avoid allegedly provocative actions in a crisis that would preclude increasing readiness to fend off attacks. Proponents of arms control in the form of confidence-building measures too often assume a requirement for symmetry that makes no sense militarily or in terms of security-related equity. For example, it would be ridiculous to require that a small state not be able to ready its modest forces along its borders merely because its mammoth neighbor state was enjoined from concentrating massive forces along the same border. There is a significant late-1980s literature on the theory of sound operational arms control.

One of the most important realities in thinking about immediate deterrence is that the current U.N. mechanisms for crisis action are altogether unsuitable and incompetent for supporting serious efforts at immediate deterrence. Alternative mechanisms *must* be found, because neither the United States nor its partners are likely to engage in unilateral actions, however virtuous. International legitimacy is essential.

Item 6 in Table G. 1.2 is unusual: it is a concept of assured strategic punishment of aggressors. "Punishment strategies" have been unfairly and incompetently maligned over the years by academic studies. Except for nuclear deterrence, which is deemed unique, it is often claimed that history proves that punishment strategies do not work. Claims to that effect fail to understand the underlying decision dynamics and overinterpret modest historical data (e.g., on the alleged failure of U.S. bombing of North Vietnam). What Table G. 1.2 refers to is something quite different and quite consistent with fundamentals of influencing decisions. A major deterrent of action is the *certainty of prompt* and unpleasant punishment. Today, a potential aggressor has many ways to rationalize (whether or not wisely) that punishment might not happen at all, would probably be short-lived if enacted, and would probably be spottily applied. By contrast, suppose that in each region of interest there were a regional security framework in which participants agreed—in advance—to respond to any armed aggression by immediately curtailing diplomatic relations, severing trade, and imposing an embargo. The potential aggressor would no longer be able to count on political dithering by the various states. Further, the leader of the aggressive state would no longer find it easy to persuade other

Table G.1.3 Actions Needed to Extend Deterrence

National Security Council (NSC)	• Create "doctrine" for crisis action preparation with representatives of Congress and allied states. Use seminar gaming, analysis, option development, and assessment. • Develop strategy and "doctrine" for long-term political, economic, and military punishment of aggressor states, including a declaratory policy. • Develop "doctrine" for the most effective combined use of political, economic, and military instruments for immediate deterrence.
Department of Defense	• Develop operations plans for a wide variety of punishment strikes, as well as related exercises and declaratory policies. • Put a high programmatic priority on maximizing the real and perceived effectiveness of long-range bombers and on-station carrier battle groups for D-Day military strikes against invading forces. • Raise further the priority of means for operating in a weapons of mass destruction (WMD) environment and for deterring use of WMD.
Department of State and Arms Control and Disarmament Agency	• Develop options for discussions with the world community about ways to replace the current U.N. mechanisms for crisis action. • Encourage, region by region, security frameworks in which, among other things, participants agree on automatic punishment of aggressor states. • Develop militarily sensible arms-control initiatives tailored for the various regions of interest, focusing primarily on avoiding surprise attack and improving relations generally.
Department of the Navy and Navy commanders participating in CINC activities	• Participate as a major player in activities listed under National Security Council actions • Increase the military effectiveness of navy "flexible deterrent options." • Develop capabilities for short-warning D-Day strikes on military forces. • Develop capabilities for leveraging target country military capabilities early in a crisis (e.g., via reconnaissance, surveillance, long-range fire, communications, and information warfare, including the ability to communicate well with friendly forces and other services). • Continue to pursue ship-based ballistic missile defense and campaign management capabilities. • Develop preemptive options against WMD forces. • Examine needs for enforcing political, military, and economic sanctions against *large* aggressor states. • Maintain indefinitely the ability to operate safely in all ocean regions of interest, even in the "neighborhood" of large states such as Russia and China.

leaders that a proposed military action might be cost-free. Suppose further that the United States and other relevant nations were known to have capabilities and well-exercised operations plans for strategically significant military punishment of rogue states—e.g., destruction of the adversary's naval forces or attacks on economic targets expected to cause few civilian casualties. Surely, such options would further enhance worries about "consequences." To be sure, military punishment options would be controversial against nations with the capability for nuclear strikes on the United States (or even regional states), but the existence of such punishment options would improve deterrence and the options might actually be executable, especially given overwhelming nuclear superiority and perhaps some level of ballistic missile defense. In any case it would seem unwise to preemptively discard such options out of a belief that they could never be credible.

POTENTIAL ACTIONS

What implications might this discussion have for follow-on actions? It would seem that there are many implications, but Table G. 1.3 summarizes some of the most important. It ends with possible actions for the Navy, without providing analogs for the other services, because the Navy sponsored the National Research Council study for which this paper was developed.

APPENDIX G.2

Decision Modeling as an Aid to Strategic Planning and Crisis Action

Paul K. Davis, Rand

ABSTRACT

Most studies of deterrence and crisis action approach issues in the vernacular and structures of political science. This paper summarizes an alternative approach based on behavioral decision models. Decision modeling has distinct advantages for structuring issues, appreciating psychological factors, avoiding mirror imaging and the tyranny of the best estimate, and discriminating among situations when developing strategy. The decision models are not the familiar abstract constructs of utility theory, but rather natural-language models expressed in diagrams and tables that can be discussed in group settings and used to guide or generalize from political-military crisis games. Although the methodology requires background use of logic and mathematics and should be guided by serious analysts, it largely involves concepts and reasoning understandable by individuals with backgrounds as diverse as law, international relations, physical science, psychology, or military planning. The methods have been applied experimentally to nuclear crisis stability, understanding and predicting the behavior of Saddam Hussein, understanding historical crises early in the century, the decisions of states contemplating development of nuclear weapons, and strategies for dealing with North Korea.

INTRODUCTION

There are many ways to approach the issue of deterrence. The one discussed here (see references for details and citations to the literature) focuses on understanding the *reasoning* of the potential aggressor (who may not think of himself as an aggressor). This approach is concerned with human perceptions, arguments, and logic-all of them affected by psychological considerations. It seeks to describe such reasoning analytically by building models of reasoning that can be used not only to improve insights retrospectively but also to guide strategy *prospectively.*

In attempting to describe reasoning analytically, one could structure the problem in any of several ways. The approach described here assumes *limited rationality* and universal classes of reasoning patterns. Assuming "limited rationality" means that the relevant leaders (1) attempt to relate means to ends (i.e., their decisions and actions have purpose); (2) consider a range of options; and (3) evaluate those options in terms of likely outcome, most favorable outcome, and worst-case outcome. Thus, the leaders *attempt* to be rational and

even take uncertainty into account. However, their decisions may be flawed because of incomplete or incorrect information, the mental frames through which information is viewed, anxieties, extreme dissatisfaction with the status quo, erroneous mental models of the other protagonists, and other factors. Perceptions may even shift wildly during a fast-moving crisis. Further, leaders have very different attitudes about risk taking.

It is controversial in some circles to assume rationality, but most of the national leaders who have sometimes been described as irrational (e.g., Adolph Hitler, Joseph Stalin, the Ayatollah Khomeni, and Saddam Hussein) were quite rational in the sense defined above. Some of them suffered from severe psychological problems and exhibited bizarre and abhorrent behavior, but their most strategically significant decisions can be understood in terms of their objectives and perceptions. It is also important to recognize that *all* of us are subject to making a wide variety of perceptual and reasoning errors, but we do not consider ourselves irrational. "Limited rationality" allows for a wide variety of such cognitive "errors," which go by names such as framing, anchoring, attributional inference, "group think," and so on.

The second assumption is that it is useful to structure the theory around universally observable types of reasoning rather than culture-specific concepts such as the so-called Arab, Oriental, Latin, or Western minds. To be sure, cultural factors can have profound effects that must be reflected in any application of theory, but the current approach has such factors entering along the way in context-dependent ways rather than as part of basic structure. The relevant behaviors of historical leaders can be found in all cultures, albeit with different frequencies. For example, the Arab world has produced Anwar Sadat and Saddam Hussein, and the Western world has produced George Bush and Adolph Hitler.

MODELING OPPONENTS AND THEIR ASSESSMENT OF OPTIONS

Assessment of Options

Let us next consider how many aggressors may, *in effect,* have reasoned about their options in the past and how many others may do so in the future. To repeat, they are attempting to make rational decisions. They are considering options and are also examining likely and possible consequences of those options, as suggested in Table G.2. 1. The format here is that for each option the reasoner estimates the likely outcome, most favorable outcome, and worst-case outcome. He then makes an overall assessment of the option based on these estimates. Each outcome is characterized by a value in the set {Very Bad, Bad, Marginal, Good, Very Good}. Although real-world reasoning is seldom so tidy or linear, the assumption here is that it ends up addressing the issues indicated.

Table G.2.1 Generic Decision-Table Format for Assessing Options

	LIKELY OUTCOME	MOST FAVORABLE OUTCOME	WORST-CASE OUTCOME	ASSESSMENT
OPTION 1				
OPTION *N*				

This basic structure is generic, but estimates of the various outcomes depend sensitively on perceptions and values. To understand how a potential opponent might reach individual judgments about, for example, the worst-case outcome (would it be Very Bad, Bad, Marginal, Good, or Very Good?), we need:

- Alternative mental images of the opponent,
- An understanding of what factors are most likely to affect the opponent's reasoning,
- A way to go systematically from the image and factors to estimates of the opponents' various judgments, and
- A way to combine judgments in reaching overall assessments of options.

Alternative Images of the Opponent

Developing *alternative* images is an antidote to some of the problems associated with the tyranny of best-estimate thinking, which is so often wrong. To develop alternative images of the opponent's reasoning, one can use a combination of essay writing, attribute lists, influence diagrams, and cognitive maps. In one image, for example, the opponent may be pragmatic and incrementalist; in another, he may be exceedingly ambitious and frustrated; in yet a third, he may feel cornered, surrounded by enemies, and desperate.

Figure G.2.1 shows contrasting "cognitive maps" (closely related to what others call "influence diagrams") used in a study of Saddam Hussein. They represent very different images of Saddam's perceptions about the economic situation in mid-1990. The convention in such diagrams is that when an arrow connects two items, an increase or improvement in the first leads to an increase or improvement in the second, unless there is a negative sign, in which case an increase or improvement in the first leads to a decrease or worsening in the second. Negative signs are usually used to indicate a troublesome influence.

For example, at the bottom of Figure G.2.1a, we see that an increase in U.S. trade sanctions would *worsen* Iraq's economic status.

Figure G.2.1a represents the cause-effect relationships emphasized in the intelligence community's "best-estimate" understanding of Saddam prior to the invasion. Figure G.2. lb represents an alternative image that could readily have been formulated at the time, except for the pressures to focus on a single best estimate. It includes additional factors such as Saddam's perception that his problems were the direct result of Iraq's being squeezed deliberately by his enemies (the United States, Kuwait, and Saudi Arabia among them). It also highlights the connection between his economic travails and his grandiose ambitions. Note that although nearly all the experts would have agreed on all the factors in either diagram being "significant," the dominant mental image (Figure G.2. 1a) was one in which some of the factors were not given much emotional weight. The purpose of the diagrams is merely to highlight differences of perspective, in this case differences in perspective about how Saddam might be viewing the world. We used a number of such diagram pairs in depicting our two images or models of Saddam Hussein. Although the work started after the invasion and we therefore had no trouble constructing a model to explain it, the models were both insightful and predictive for Saddam's subsequent behavior through February 1991 (i.e., his failure to pull out of Kuwait in the kind of compromise American strategists feared).

Table G.2.2 illustrates a different method for clarifying distinctions between images of the opponent, one based on an attribute list. Again using the example from our study of Saddam Hussein, Model 1 is painted as being essentially pragmatic and relatively risk averse. Model 2 is more ambition driven and risk accepting.

Identifying the Factors Affecting Judgments and Decisions

Suppose we have used methods such as the cognitive maps, attribute lists, and other devices to develop strong alternative mental images of the opponent. The next step is identifying the factors (i.e., variables) most likely to contribute to the opponent's judgments, notably judgments about the likely, best-case, and worst-case outcomes of various options. It is not very useful to attempt this in abstract terms, because so much of what seems to matter is exquisitely context dependent. It is more useful to brainstorm the problem with an interdisciplinary mix of regional experts and strategists, to identify key factors in concrete "natural" language (e.g., Saddam Hussein's assessment of President Bush's resolve), and to develop *hierarchies* of such factors (or variables). This approach reflects the observation that people make their most reasoned judgments on the basis of only a few "high-level" variables, but these variables, in turn, sometimes reflect many subordinate judgments about "lower-level variables."

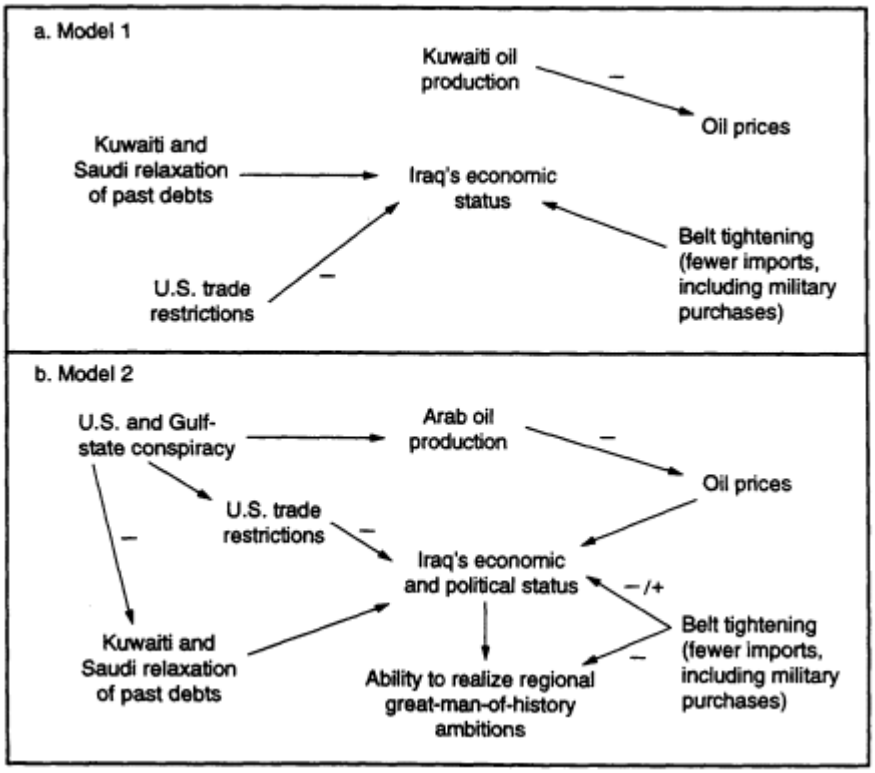

Figure G.2.1 Saddam's image of the 1990 economic situation: two models.

To illustrate this, consider how Saddam Hussein may, in mid-1990, have assessed his worst-case outcome (i.e., his "risks") for an option in which he invades Kuwait. Was the worst-case outcome (risks) very bad, bad, marginal, good, or very good? In the summer of 1990 as Saddam Hussein contemplated this matter, it is likely that he considered the risks would result from two principal possibilities: the possibility that the United States would defend Kuwait directly and immediately, and the possibility that even though the United States didn't defend Kuwait itself, it would deploy forces into Saudi Arabia and change the balance of power in the region We do not *know* that Saddam thought about the problem this way, but it is likely that these possibilities were on his mind explicitly or implicitly. To assess risks, then, he would be concerned about the likelihood of each of these possibilities and the consequences. The consequences of an immediate war with the United States would obviously be very bad, but the likelihood of that (i.e., the likelihood of the United States defending Kuwait) probably did not appear large. The United States was more likely to deploy into Saudi Arabia, although the Saudis *probably* would not permit it, but even if such a deployment and related

sanctions occurred, the likely consequences would be tolerable: the Saudis would tire of the U.S. presence, other regional states would deplore it, and economic sanctions would probably not last longer than 6 months or so.

Table G.2.2 Comparing Attributes of Models 1 and 2 of Saddam Hussein

Attribute	Model 1	Model 2
Ruthless, power focused; emphasizes *realpolitik*	••	••
Ambitious	••	••
"Responsive"; seeks easy opportunistic gains	••	•
Impatiently goal seeking; likely to seek initiative	•	••
Strategically aggressive with nonincremental attitudes		••
Contemptuous of other Arab leaders	•	••
Contemptuous of U.S. will and staying power		••
Financially strapped and frustrated	••	••
Capable of reversing himself strategically; flexible (not suicidal)	••	••
Clever and calculating (not a hip shooter)	••	•
Pragmatic and once burned, now cautious	••	
Still risk taking in some situations	•	••
Grandiosely ambitious	•	••
Paranoid tendencies with some basis	•	••
Concerned about reputation and legitimacy in Arab and Islamic worlds	•	
Concerned only about being respected for his power		••
Sensitive to *potential* U.S. power not immediately present	••	•

Figure G.2.2 characterizes hierarchically Saddam's likely risk assessment when he contemplated the particular option of conquering Kuwait. For example, the figure suggests that Saddam would have seen larger risks if there had been strong and credible political warning of U.S. intervention, warning evidenced by strong and credible diplomatic messages along with other indications of resolve by President Bush and Congress. Saddam would also have seen higher risks if there were reason to believe that the United States considered Kuwait to be a vital national interest. Indicators of that might have been a defense agreement, the presence in Kuwait of U.S. forces, or "objective" considerations such as the expectation that Iraq would cut off Kuwaiti oil to the West. Diagrams such as that in Figure G.2.2 can be worked out in group discussions and then embellished with subsequent analysis.

Figure G.2.2 Possible map of Saddam's assessment of risk before invading.

Estimating the Opponent's Judgments and Decisions

Given alternative images of the opponent and an understanding of likely options and major variables or factors, it is possible to estimate how the opponent might reason in a wide variety of circumstances—not merely today's circumstances, but those that might exist tomorrow or next year. For each image of the opponent, we can develop what can be called judgment tables and decision tables. Judgment tables represent how the opponent might look at each of several factors and reach an overall judgment about, say, the most likely or worst-case outcome of a given option. A decision table is similar but relates specifically to evaluating the options in a common format.

Table G.2.3 illustrates a judgment table for model 2 of Saddam Hussein evaluating risks of a conquer-Kuwait option in mid-1990 consistent with the factors identified in Figure G.2.2. It covers a wide variety of possible world situations. Lines indicated in bold letters show the situations that Saddam probably believed best characterized reality in mid-1990, with the result that he probably considered risks to be marginal (or less) rather than bad or very bad.

Table G.2.4 shows a decision table for model 2 of Saddam Hussein evaluating strategic options in late July 1990. The net assessment for the conquer-Kuwait option is very good. (By contrast, model l's assessment was very bad.)

Where do the judgments and decisions (i.e., the values in the last columns of Tables G.2.3 and G.2.4) come from? They are subjective estimates made by the author and colleagues, who studied the alternative images and tried to "get inside the minds" of the adversaries. However, there is logic connecting the elements of the image (e.g., the cognitive maps and attribute lists) with the individual judgments. Indeed, some of this can be treated mathematically to

improve rigor. (It is also possible to build artificial intelligence models to formalize the logic, but the price of doing so is very high.)

The following formula is one way to express the combining logic mathematically when estimating the "net assessment" of an option:

$$N = R\{aL+bM+cW\}/\{a+b+c\}$$

Here *N* is the net assessment of an option; *L, M,* and *W* represent, respectively, the likely outcome, most-favorable outcome, and worst-case outcome; *R* is a rounding operator; and *a, b,* and *c* are weighting factors. If reasoning itself is qualitative, then the formula can be used by first mapping the qualitative values into numbers (e.g., very bad? -2, bad? -1, . . .), computing the net assessment numerically, and then remapping the result back into qualitative values. This approach creates a preference order for the options. By choosing different values of *a, b,* and *c,* one can represent the reasoning of leaders that are more and less risk acceptant, or less and more tolerant of the status quo. This is quite important in practice.

It is useful to postulate several types of reasoning that differ primarily in attitudes toward risk and that assume a higher willingness to take risks when the current and projected situations are deemed to be very bad and a reduced willingness to take risks when the current situation and prospects are deemed to be reasonably good. This reflects the well-established (and intuitively familiar) psychological phenomenon described in "prospect theory," developed largely through the work of Daniel Kahneman and Amos Tversky. Psychologically, the reasoning styles might better be characterized as having a predisposition to "go for it" or "take no chance," depending on perceptions about the goodness of the current situation and current trends. Another key point the author has highlighted is the role of thresholds: below some level of perceived probability, risk is treated as zero, despite the consequences of the risk. That is, not only do we often underestimate risks, but we also often go farther and *ignore* those we have judged low. The reverse also happens: we sometimes rule out options because we see them as involving a level of risk beyond some threshold of acceptability.

The point here is that we cannot only construct formal models to reflect best-estimate notions about how the opponent is and may in the future be reasoning; we can also construct alternative models to reflect fundamental uncertainties about the nature of that reasoning. The principal question, of course, is whether we have to consider an infinite number of such alternative models. The answer appears to be no. Indeed, having two or at most three models appears to go a very long way, especially since one can also do sensitivity analysis within a given model. This is crucial, because it means that the technique, which is surely good for getting groups to confront uncertainty and be more humble about any "best estimate," should also be workable in practice. Formal intelligence estimates and high-level meetings should be able

Table G.2.3 Model 2's Late July Risk Assessment for the Conquer-Kuwait Option

LIKELIHOOD OF U.S. DEFENDING KUWAIT	LIKELIHOOD OF U.S. DEPLOYING INTO SAUDI ARABIA	CONSEQUENCES OF U.S. DEPLOYING INTO SAUDI ARABIA	ARAB ATTITUDES ABOUT INVASION	RISKS
Low	High	Very Bad	—	Very High
Low	Marginal	Very Bad	Bad	High
Low	Marginal	Very Bad	Marginal or Good	High
Low	Low	Very Bad	Bad	Low
Low	Low	Very Bad	Marginal or Good	Low
Low	High	Bad	Bad	High
Low	High	Bad	Marginal or Good	High
Low	Marginal	Bad	Bad or Marginal	Marginal
Low	Marginal	Bad	Good	Low
Low	Low	Bad	Bad	Low
Low	Low	Bad	Marginal or Good	Low
Low	High	Marginal	Bad	Marginal
Low	High	Marginal	Marginal or Good	Marginal
Low	Marginal	Marginal	Bad	Low
Low	Marginal	Marginal	Marginal or Good	Low
Low	Low	Marginal	Bad	Very Low
Low	Low	Marginal	Marginal or Good	Very Low
Low	—	Good or Very Good	—	[Not Plausible]
Marginal	—	—	—	High or Very High
High	—	—	—	Very High

Table G.2.4 Model 2's Assessment of Saddam's Options, Late July 1990

OPTION	CURRENT STATUS	LIKELY PROSPECTS	RISKS (WORST-CASE PROSPECTS)	OPPORTUNITY (BEST-CASE PROSPECTS)	NET ASSESSMENT OF OPTION
1. Coerce Kuwait	Very Bad	Bad	Very High	Marginal	Bad
2. Occupy part of Kuwait	Very Bad	Marginal	Very High	Good	Marginal
Conquer all of Kuwait	Very Bad	Very Good	Marginal	Very Good	Very Good
4. Invade Kuwait and Saudi Arabia	Very Bad	Very Bad	Very High	Very Good	Bad

to cope with two, or conceivably three, very different perspectives on how the opponent may be thinking.

FACTORS TENDING TO INCREASE RISK TAKING

Since risk-taking propensity is such an important issue in determining the probability of aggression, it is worthwhile to review major factors tending to increase a willingness to assume risk (Figure G.2.3). Starting at the top and moving clockwise, we see first the previously mentioned role of the current situation. The next factor is the degree to which the decision maker can make decisions unilaterally, without broad discussion that might mitigate perceptions and introduce new considerations. The next factor is ambition. This is often underestimated in thinking about adversaries in crisis and conflict. Status quo powers fairly comfortable with their own circumstances are especially likely to underestimate others' ambitions. So it is that Saddam Hussein was erroneously assumed to be "pragmatic" and to be merely looking for a way to improve Iraq's economic situation "somewhat," when in fact he had grandiose goals. Similarly, the United States applied incrementalist compellence logic to Ho Chi Minh, when he was an idealist revolutionary. Other factors include opportunities for reaching important goals, the abstractness of risk factors (the more abstract the risk factor, the more it may be underestimated by someone who is yearning for action), pain, and the degree to which the protagonist believes he is in control of events and therefore able to "make his own luck." All of these factors should be familiar from everyday life, supplemented by a knowledge of history. It should perhaps be obvious that in applying the theory described above, one considers the presence or absence of the factors in Figure G.2.3 when estimating how a given type of decision maker might judge the worst-case outcome of a given option. One also uses these factors in judging which reasoning models to employ (e.g., in choosing parameter values *a, b,* and *c,* and rounding rules of equation 1, to correspond to more or less risk aversion).

Figure G.2.3 Factors contributing to risk-taking behavior.

A GENERIC SITUATION ENCOURAGING AGGRESSION

Let us now consider a sketch of how the theory applies to real-world problems of defense planning and foreign policy. To do so, consider first a decision table describing a remarkably generic situation to be avoided, one in which aggression is possible and deterrence is difficult. Table G.2.5 is the decision table that we do not want potential aggressors to be implicitly using.

The salient features of this somewhat generic dangerous situation are

- The perception that the current situation is very bad (implicit in the conclusion that a continuation of peaceful policies would have a very bad likely outcome);
- The perception that continuing current or other peaceful policies will not improve the situation;
- The perception that mere coercion may have a payoff, but not much, and might make things worse (e.g., by strengthening the coalition of hostile interests and by causing the potential target of aggression to increase its defenses); and
- The perception that military action is likely to pay off, may pay off handsomely, and involves risks that are not outrageous and perhaps only marginal.
- Importantly, national leaders have their own standards in evaluating current situations and the outcomes of various options. These often differ substantially from the standards that leaders of other nations might expect. As suggested above, it is easy to underestimate ambitions (and emotions) of adversaries by

Table G.2.5 Assessments Encouraging Aggression in Response to a Dangerous Situation

Option for Action	Likely Outcome	Best-Case Outcome	Worst-Case Outcome	Assessment
1. Continue peaceful policies	Very Bad	Bad	Very Bad	Very Bad
2. Coerce target	Bad or Marginal	Marginal	Very Bad	Bad
3. Take limited military action for limited gains (e.g., conquer a portion of target's country)	Marginal or Good	Good for Very Good	Bad or Marginal	Marginal or Good
4. Invade; conquer target country	Very Good	Very Good	Bad or Marginal	Marginal or Good

assuming that they will behave "pragmatically" or "reasonably," by which is meant being satisfied with only marginal improvements in their situation.

It is also a profound mistake to believe that adversaries necessarily reason in a way that decision theorists would describe as attempting to maximize expected utility. Exceedingly ambitious, goal-driven people often seek to maximize the likelihood of success, which is quite different psychologically from maximizing expected utility. That is, utility theory is a poor way to represent such reasoning even though one can look at behavior and infer effective utility functions.

CONCLUSIONS

The methods described here could be profitably used routinely in a wide variety of national security planning contexts such as studies of plausible contingencies, peacetime crisis gaming, high-level gaming in the presence of strategic warning, and the development of better intelligence assessments. They are particularly good for getting beyond the "tyranny of the best estimate" that has so badly affected prior decision making. They are also very good for structuring discussion and allowing strategists to discriminate among situations that might appear analogous if one were to operate solely on the basis of intuition gained from real-world experience and a few human crisis games. That is, the methods described here can draw heavily on experiential methods such as gaming, but they are substantially more analytic and integrative. A word of caution, however. These methods are no better than those who apply them. Ideally, applications should be guided by strongly analytic people drawing, in an interdisciplinary setting, on the perspectives and expertise of strategists, regional experts, military officers, and others.

BIBLIOGRAPHY

Davis, Paul K., ed., "Improving Deterrence in the Post-Cold War Era: Some Theory and Implications for Defense Planning," *New Challenges for Defense Planning: Rethinking How Much Is Enough ,* Rand, Santa Monica, Calif., 1994.

Davis, Paul K., and John Arquilla, Deterring or Coercing Opponents in Crisis: Lessons from the War with Saddam Hussein, Rand, Santa Monica, Calif., 1991.

Thinking About Opponent Behavior in Crisis and Conflict: A Generic Model for Analysis and Group Discussion, Rand, Santa Monica, Calif., 1991.

For an application to proliferation issues see:

Arquilla, John, and Paul K. Davis, Modeling Decisionmaking of Potential Proliferators as Part of Developing Counterproliferation Strategies, MR-467, Rand, Santa Monica, Calif., 1994.

APPENDIX G.3 Protecting Weak and Medium-Strength States: Issues of Deterrence, Stability, and Decision Making [1]

Paul K Davis, Rand

ABSTRACT

Deterring the invasion or coercion of weak or medium-strength states that are important but not vital interests of major states is a key strategic challenge of the new era. This paper describes strategies for doing so. It begins by using decision-modeling methods to identify factors that would influence the decisions of would-be aggressors, including factors idiosyncratic to individual leaders. It then discusses how both immediate and general deterrence might be strengthened by a variety of political, economic, and military measures. The measures discussed include reasonably capable defensive forces that cannot easily be bypassed, operational arms control to make surprise attack more difficult, forward-deployed protector forces, and formal arrangements through regional security structures that would assure the long-term punishment of aggressors through political and economic isolation and, perhaps, military measures. The paper also encourages identifying and rooting out "dangerous ideas" that increase regional tensions and hatreds, and that could encourage aggression during a crisis. The following pages document the methods described here and include extensive references to relevant literature in political science, psychology, history, and strategy.

INTRODUCTION

A Central Premise

This paper was developed for an international conference dealing with long-term stability and security in a multipolar world. Rather than discussing stability and security in the broad, however, it focuses on the challenges that follow from my central premise that a principal strategic issue for the developed world is how to deter invasion or coercion of weak and medium-strong states

[1] Presented at the International Symposium on Modeling and Analysis of Stability Problems in Multipolar International Systems, June 7-9, 1995, Universität der Bundeswehr, München, Germany, and the NATO Symposium on Military Stability, June 12-14, 1995, NATO Headquarters, Brussels, Belgium. The paper is an adaptation of a longer paper by the author, "Protecting Weak and Medium-Strength States: A Major Challenge for Strategic Planning," MR-643-OSD, Rand, Santa Monica, Calif., forthcoming.

when the security of the threatened states is important but is not a "vital" national interest of the powers that might be the protectors.

This premise is provocative, primarily because of the reluctance of democracies to face up to challenges that do not clearly affect their truly vital interests. To some, it conjures up images of entangling alliances, world policeman functions, strategic overextension, and quagmires. To others like myself, it seems to be a sober expression of reality. If accepted, it has a considerable impact on how one thinks about foreign policy and defense planning.

Approach

In what follows, I start by illustrating how this deterrent challenge may arise and why it is so difficult. I then describe how deterrence issues can be examined with the aid of an analytic approach that focuses on influencing the decisions of human beings. This includes actually modeling the decisions of such leaders.[2] I next abstract from this discussion a way to summarize deterrence factors in the form of a "success tree" that can help guide the development of strategies. Finally, I draw on insights from the decision modeling approach to describe potential deterrent strategies that might be recommended to weak or medium-strong states, on the one hand, and strategies that might be recommended to the United States and its partners of the developed world, on the other. Many features of the strategies are familiar from other approaches, but some reflect more uniquely the decision-modeling's emphasis on the perceptions and reasoning of adversaries.

DETERRENCE AT THE BEGINNING OF A NEW CENTURY

Let us begin by considering the challenge of deterrence in rather general terms. Who is to be deterred from doing what, what kinds of deterrence are worth distinguishing, why is deterrence sometimes difficult, and why are there some reasons for believing it is feasible to do better in the future than in the past?

Potential Threats

The major states of the developed world want to deter international aggression as part of maintaining regional stability. Usually, however, the objective is discussed in abstract terms. To be more concrete, consider the following range of threats that might arise in the next 20 years as viewed from one American perspective.[3]

[2] See Davis (1994a) for the best available summary of the approach. For more details, including applications to issues of nuclear and conventional crisis stability, deterrence, and counterproliferation, see Davis (1987), Davis and Arquilla (1991a,b), and Arquilla and Davis (1994).

[3] For more extensive discussion of possible contingencies, see Kugler (1995).

- The old standbys of U.S. planning: a renewed threat by Iraq against Kuwait and Saudi Arabia, or an invasion of South Korea by North Korea.
- A future invasion (or coercion) of Poland, Ukraine, or the Baltic states by a future Russia gone sour; an invasion of Taiwan, Vietnam, or a unified Korea by a more militant China; or an invasion of Kuwait and Saudi Arabia by a combination of Iran and Iraq.
- Something that might be called "The Next Bosnia," perhaps once again in the Balkans.

None of these is implausible in the long run. Some, however, are more difficult to contemplate than a repeat of Saddam Hussein's invasion of Kuwait. For example, the threats involving Russia or China are uncomfortable because neither state is behaving aggressively today toward its neighbors and there is no interest in labeling either of them as a future "enemy." If matters go well, Russia and China will develop, liberalize, prosper, and interact continuously with other states as partners in developing a better world. On the other hand, that is not guaranteed and the extreme nationalist movement in Russia is certainly a matter of concern, as is the degree of bitterness expressed by some Russian military officers about the state of affairs in Russia and what amounts to the loss of empire. Although Russia's army is currently in disarray, it will remain huge and may pull itself together. It is also unclear whether, in the years ahead, China will view the world in classic balance-of-power terms or take the more liberal perspective reflected in the U.N. charter and the actual behavior of nearly all developed states.

The other complication in thinking about future threats is that many of the threats are to particular weak and medium-strong nations whose security is desirable but is not necessarily a "vital" national interest of the United States or other major states. As a result, it is difficult for governments even to discuss such threats within the context of national defense planning.[4] Nonetheless, any of the aggressions indicated could be a serious affront to broad interests, even if not vital interests. But how do we deal with such threats, especially when they seem so remote and less than vitally important?

In this regard, consider that one of the paramount blunders of the last decade was the judgment by national leaders and strategists as they observed the disintegration of Yugoslavia that a war among the various emerging factions, although highly regrettable, would not strongly affect their own national interests. This view changed grudgingly with CNN's broadcasts of ethnic cleansing, émigrés flowing into neighboring countries, and the partial dashing of

[4] It has taken several years of debate even to begin the process of expanding NATO to include, e.g., Poland, even though the security of Poland should rather clearly be a vital interest of Western Europe. See, e.g., Asmus, Kugler, and Larabee (1995).

hopes for a new world order, but it seems clear that current world leaders do not yet know how to deal with threats to less than vital interests. Even if they had personal concepts on the matter, there is great public reluctance to get involved in unnecessary conflicts in foreign lands.

Useful Distinctions

Given, then, the existence of potential challenges, especially to weak and medium-strong states that are not obviously vital interests of the United States or other major states, let us next consider deterrence and what we mean by the term, since it has many variants. In this paper:

- *General deterrence* refers to a continuing influence over a period of years. It may exist whether or not there are crises to demonstrate it.
- *Immediate deterrence* refers to deterring actions at a particular time, as in deterring actions that would create a crisis or escalate it.
- *Direct deterrence* refers to an actor (e.g., nation or coalition) deterring actions against itself.
- *Extended conventional deterrence* refers to an actor deterring actions of a second actor against yet a third actor. It can be general or immediate.

By and large, the security challenges facing the United States and its NATO allies involve extended conventional deterrence. America's ally South Korea, of course, has a direct threat today from North Korea. In the distant future, Korea may have a virtual threat from China. Ukraine, the Baltic states, and Poland see direct threats. In what follows, I shall consider challenges of both direct and extended deterrence, of both the general and immediate varieties.

Sobering Realities

There has been so much said about deterrence that one might think that the issues and necessary strategies are well understood. Nuclear deterrence, to be sure, has succeeded for many decades, and the leaders of major states fully appreciate the reasons for avoiding nuclear warfare. The reality is much less happy, however, when one looks at direct and extended conventional deterrence. Although it seems to have worked for NATO's Central Region, Huth and Russett have demonstrated that immediate deterrence has failed more often than it has succeeded over a large set of crises in the 19th and 20th centuries--even though the aggressor ultimately failed roughly two-thirds of the time, which suggests that deterrence "should" have had a better track record. [5]

[5] See Huth (1988) and Huth and Russett (1988). This work has stimulated a great debate on whether democracies do not go to war against each other, and whether a no answer can be

That it has failed so often under such circumstances is sobering and even alarming.
Some of the myriad reasons for deterrence having failed are as follows:

- Nations often fail to appreciate their own interests or to make them known adequately to the aggressor ahead of time.
- Potential aggressors often fail to appreciate the capability that can be brought to bear against them when that capability is distant and abstract, as was the British Navy of the 19th century or the U.S. projection forces of 1990 (Arquilla, 1992).
- Sometimes, aggressors believe that the reasons for their actions are compelling. That is, they "have no choice." Such was apparently the Japanese view prior to Pearl Harbor.
- Nations, especially democracies, have difficulty taking decisive action in response to ambiguous strategic warning. Taking such actions can be considered provocative and dangerous, thereby making such actions politically quite troublesome (Davis and Arquilla, 1991b).
- Military leaders are often extremely conservative about taking the kinds of prompt but risky actions necessary to establish or reestablish deterrence in a crisis. They worry about being dragged incrementally into a quagmire, about depending on a trip wire that might be tripped with the loss of their soldiers, or about political authorities acting without first establishing consensus.[6]

Even this list is not long enough. Consider that aggressive personalities such as Saddam Hussein and Slobodan Milosevic still seem to ascend to power all too frequently. Consider also that expectations have changed because of the alleged lesson taught by Bosnia about ethnic and religious differences being enduring and fundamental. And, finally, we should also face up to the sober reality that the United Nations is thoroughly ineffective in dealing with security threats requiring prompt and decisive actions.

inferred from history. See, for example, Layne (1994), Russett (1995), Spiro (1995), and Doyle (1995), which contain citations to the earlier literature. See also Arquilla (1995), which expresses pessimism about regional deterrence.

[6] This conservatism is discussed sympathetically but critically by Davis and Finch (1993). It can be argued that the uniformed military exaggerated greatly the forces that would be required for intervention in the former Yugoslavia, especially in the early phases when it is plausible that firm military actions such as air strikes and deployments would have convinced Serbia to cease its aggression (Huber, 1994). On the other hand, it can be argued that such actions might not have succeeded and that far greater commitments would then have become necessary.

More Cheerful Considerations

In light of these discouraging observations (see also Watman and Wilkening, 1995, and Arquilla, 1995), is deterrence even feasible in difficult cases? There are in fact several reasons for optimism:

- By and large, potential aggressors usually seek quick and easy conquest with low risks, thereby suggesting that deterrence "should not" be so difficult (Mearsheimer, 1983).
- Invasion is usually difficult without massed armies, indeed, without massed and mechanized armies with extensive logistics. Such armies are now extremely vulnerable to modern weapons unless the aggressor has air superiority. The issue here is not just modern air forces, but also the advent of highly accurate and lethal long-range artillery and shorter-range accurate mortar systems.[7]
- Conquering territory is arguably not as useful as it once was. Further, conquering territory no longer creates international respect.
- The dark side of nationalism appears to be diminishing on average, although events in the former Yugoslavia show how easily it can be uncovered again.[8]
- There are continuing movements toward democratic processes and shared responsibilities rather than dictatorships of conquest-oriented individuals.

To put it differently, despite the Bosnian debacle, one can argue that overall trends are still favorable. We should not focus unduly on exceptional cases.

AN APPROACH TO THE STUDY OF DETERRENCE

Observations and Motivations

Against this background let us now move to a discussion of deterrence theory. Although much has been written on the subject, the usual tendency has been to treat only some aspects of the subject while ignoring or giving short

[7] See Bennett, Gardiner, and Fox (1994) and Davis (1994b, Ch. 2) for discussion of how the nature of war has been changing and how that affects analysis requirements.

[8] The events in Bosnia were not inevitable (Zimmerman, 1995). Arguably, Bosnia is a tragedy made possible by the wrong thugs having too much military power at a time when no one could or would stand up to them, in large part because the European powers did not yet have any consensus of views (Gompert, 1994). Nonetheless, it could not have happened without the dark side of ethnicity and nationality existing.

shrift to others. There is nonetheless a substantial volume of serious thought on which to draw in considering deterrent challenges and potential strategies.[9]

Over the last decade I have taken a rather different approach to the study of deterrence than has been customary. It focuses on the decision making of leaders and on "natural" variables. The approach is motivated by several observations. First, the incentives and perceptions of aggressors are often intensely personal, as one can appreciate by thinking of Saddam Hussein's 1981 reaction to the threats of Iran's Khomeni, of current-era North Korean leaders who must worry about their personal survival, of Saddam Hussein in 1990 as he compared trends to his self-image, or to Slobodan Milosevic with his dreams of a Greater Serbia. Historically, we might think of Hitler in this century or, for example, Alexander the Great of antiquity.

A second observation here is that "great men of history," whether appropriately identified as such or merely self-proclaimed, are "special." Many do not reason in the same way we think normal political leaders do. Their values are different, their attitudes toward risk are different, and their interpretation of information is different.[10] So also is the reasoning of states dominated by ideological and ethnic-hatred considerations "special."

All of this suggests an approach to deterrence that focuses on influencing the decisions of human leaders or groups of leaders. That is, instead of everything being a matter of abstract power balances, successful deterrence depends on one or more human beings reaching certain conclusions after thinking about the situation and alternatives. The decision makers are attempting to be rational, but an observer might think the reasoning or actions to be "irrational" or "crazy." It is preferable to avoid that terminology because it is misleading and generates the notion that worrying about how to deter will be fruitless.

Modeling the Decision Making of Adversaries

With such motivations in mind, my colleagues and I have developed an approach for modeling the decision making of adversaries. Consider first a view of the proximate issues at the time of a decision. It can be used in group discussions about decision makers, by decision makers themselves, or by analysts reasoning about what opposing leaders are up to.

Assessment of Options

As mentioned above, potential aggressors *attempt* to make rational decisions. The approach represents this in a simple but unusual way by having the modeled adversary consider options and examine likely and possible

[9] For discussion of conventional deterrence theory, see Mearsheimer (1983), Cimbala (1992), Watman and Wilkening (1995), and, for a survey, Allan (1994). For the related subject of causes of war see Howard (1984) and Blainey (1973).

[10] For a closely relevant analysis critical of western deterrence theory, see Dror (1971).

Table G.3.1 Generic Decision-Table Format for Assessing Options

	LIKELY OUTCOME	MOST FAVORABLE OUTCOME	WORST-CASE OUTCOME	ASSESSMENT
OPTION 1				
OPTION *N*				

consequences of those options, as suggested in Table G.3. 1. The format here is that for each option the reasoner estimates the likely outcome, most favorable outcome, and worst-case outcome. He then makes an overall assessment of the options for action based on these estimates. Each outcome is characterized by one of the values Very Bad, Bad, Marginal, Good, or Very Good.[11]

Table G.3.2 illustrates how a table might be filled in for two different models of the same leader viewing a particular situation (not defined here). In the example the two models see the same facts differently. Model 1 is perhaps more pragmatic, risk-averse, and pragmatically incremental. He chooses the incremental option, which has low risks. Model 2 is perhaps more ambitious, more risk taking, and quite unhappy with the status quo and mere marginal improvements. He chooses the aggressive option despite the substantial risks, primarily because he sees great upside potential and also assesses the likely outcome to be at least Good.

This simple representation of the decision can be very useful in thinking about someone else's reasoning or one's own reasoning. In its highlighting of likely outcome and both upside opportunities and downside risks, it is a "natural" representation of what we do every day. It is arguably much more natural than expressions in terms of utilities, for example. At the same time, there is much that is implicit, just as there is much implicit when we make our own decisions.

Information Needed

To understand how a potential opponent might reach individual judgments about, for example, the worst-case outcome (would it be Very Bad, Bad, Marginal, Good, or Very Good?), we need:

- Alternative mental images of the opponent,

[11] Humans seldom reason in so linear and reductionist a manner, but the assumption here is that, at the end of the day, the decision make r is effectively comparing options by considering the array of judgments shown in Table G.3.2.

- An understanding of what factors are most likely to affect the opponent's reasoning, and
- A way to go systematically from the image and factors to estimates of the opponents' various judgments. This should recognize that reasoning may be psychologically flawed and that the way in which people balance benefits and risks (i.e., their algorithms, not just the factors in the algorithms) depends on their attitudes about the status quo.

Table G.3.2 . Illustrative Judgments for Two Models Considering Options

	Most Likely Outcome		Best-Case Outcome		Worst-Case Outcome		Net Assessment	
Option	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Bargaining and compromise	Marginal	Bad	Good	Marginal	Bad	Very Bad	Marginal	Bad
Security-threatening coercion	Bad	Bad	Good	Good	Bad	Bad	Bad	Bad
Limited attacks	Bad	Bad	Good	Good	Very Bad	Very Bad	Bad	Bad
Full-scale invasion	Bad	Good	Very Good	Very Good	Very Bad	Very Bad	Bad	Good

Alternative Images

Developing *alternative* images is a crucial antidote to the normal focus on so-called best-estimate thinking. To develop alternative "images" of the opponent's reasoning, one can use a combination of essay writing, attribute lists, influence diagrams, and cognitive maps. As in the example of Table G.3.2, in one image the opponent may be pragmatic and incrementalist; in another he may be exceedingly ambitious and frustrated. Perhaps he will also feel cornered, surrounded by enemies, and desperate. These images may incorporate (Davis and Arquilla, 1991 la) a variety of well-known psychological phenomena such as those discussed in the literature under "prospect theory," which may encourage greater or lesser risk taking than deemed rational by students of decision analysis.

To illustrate some of these concepts, Figure G.3.1 shows contrasting cognitive maps or influence diagrams used in a study of Saddam Hussein (Davis and Arquilla, 1991b). They represent different images of Saddam's perceptions about the economic situation in mid-1990. Figure G.3.1 a represents the cause-effect relationships emphasized in the intelligence community's "best-estimate"

understanding of Saddam prior to the invasion. Figure G.3. lb represents an alternative image that could readily have been formulated and disseminated at the time, except for the pressures to focus on a single best estimate. It includes additional factors such as Saddam's perception that his problems were the direct result of Iraq being squeezed deliberately by his enemies (the United States, Kuwait, and Saudi Arabia among them). It also highlights the connection between his economic travails and his grandiose ambitions.

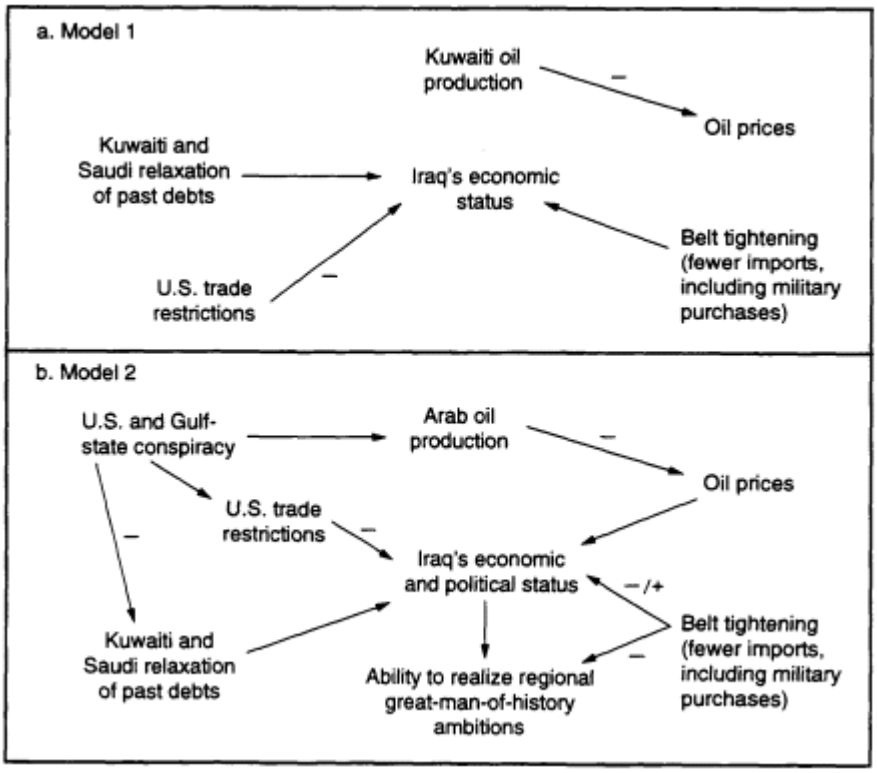

Figure G.3.1 Saddam's image of the 1990 economic situation: two models.

Although nearly all experts would have agreed on the factors in either diagram being "significant," the dominant mental image (see Figure G.3. 1a) gave some of the factors little emotional weight. The diagrams highlighted differences of perspective about how Saddam might be viewing the world. We used a number of such diagram pairs in depicting our two images or models of Saddam Hussein. Although we started our work after the invasion and therefore had no trouble constructing a model to explain it, our work proved both insightful and predictive for Saddam's subsequent behavior through February

1991 (i.e., his failure to pull out of Kuwait in the kind of compromise American strategists feared).

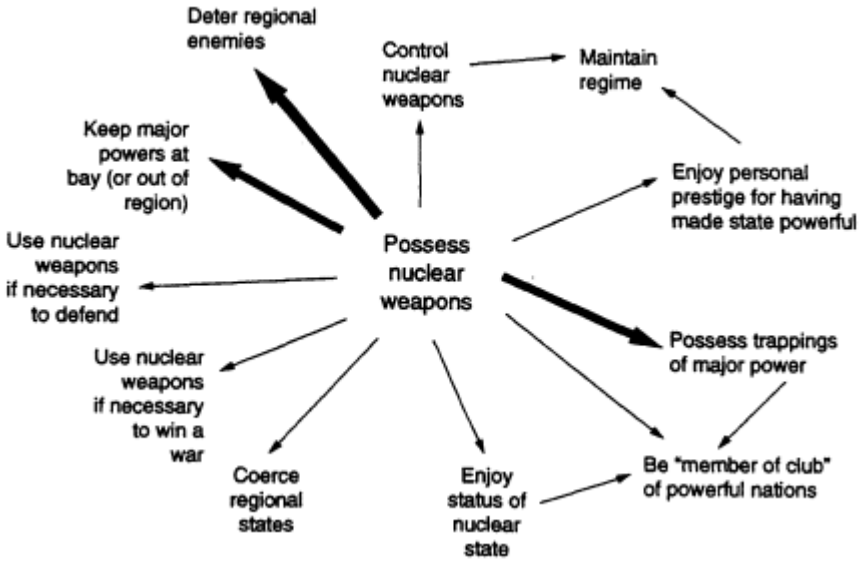

Figure G.3.2 A generic proliferator's cognitive map.

As a side note, the decision-modeling approach can be applied not only to crisis decision making but also to peacetime decisions. For example, a recent study (Arquilla and Davis, 1994) applied the methods to understanding the decisions of potential proliferators. Figure G.3.2 is a composite cognitive map developed in that study to indicate the factors potentially affecting the reasoning of states considering development of nuclear weapons. Note that in our work the most important factor is security. Other factors may include the desire to keep superpowers (read "United States") out of the region or the desire to coerce neighboring states. More recently, my colleague Zalmay Khalilzad and I applied the methods to assessing strategies for dealing with North Korea (unpublished).

Factors and Judgments

The next step in the approach is to identify the practical real-world factors that dictate judgments about things such as risks (i.e., in the terms of Table G.3.1, about worst-case outcome). For the case of Saddam Hussein before the invasion decision, the factors affecting perceived risks might have been as indicated in Figure G.3.3.

By merely "eyeballing" Figure G.3.3, one can reason about what judgments Saddam would have made given the information available on the various

factors. It seems easy to understand why he considered the risks acceptably low. However, if one of the items is not yet sufficiently explicit (e.g., "warnings from U.S." in the bottom center), the hierarchical decomposition can be continued to greater depth. The warnings from the United States included a range of diplomatic communications of varied "firmness," a very small military exercise in the Gulf, and no preparation for large-scale military operations. On balance, Saddam saw the warnings as unimpressive.

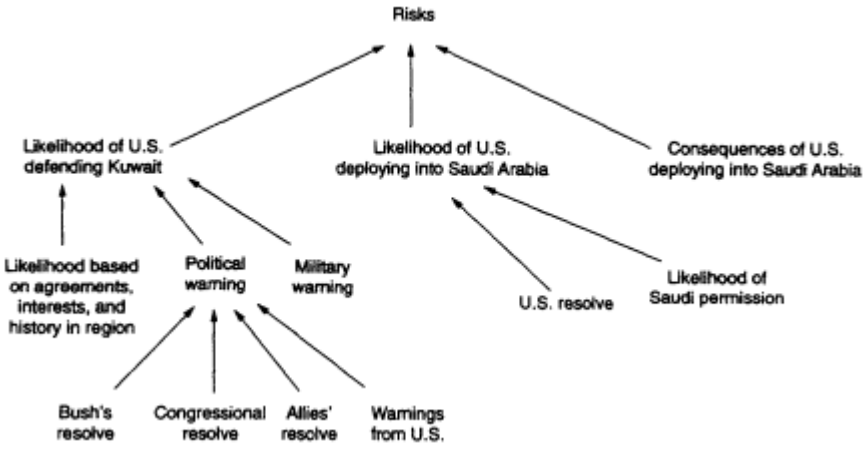

Figure G.3.3 Possible map of Saddam's assessment of risk before invading.

One further item deserves mention. In considering what factors affect decisions, it is important to recognize that "everything" can matter-everything from, say, knowledge about the military balance in heavy armor to whether the target of potential aggression has somehow personally insulted the decision maker or his state. Some factors may be moral or cultural, whereas others may be what I call "dangerous ideas," ideas that have a much greater effect on encouraging military action than they "should" have by virtue of logic and reality. Some of these dangerous ideas include deep-seated hatreds and paranoia, as when the target is felt to be the cause of all sorts of troubles. [12]

[12] Examples here include Hitler's scapegoating of Jews, Saddam Hussein's belief that the Kuwaitis were conspiring with the Americans, or the belief of Crusade leaders that they were on a religious mission with God on their side against evil infidels. I first began to emphasize the role of "dangerous ideas" when studying nuclear crisis stability. My conclusion was that nuclear war was far more likely to start from dangerous ideas, such as the belief that the other side was likely to initiate war out of a misreading of current intelligence on "random events," or a bizarre belief in being able to meaningfully win a nuclear war, than from game-theory calculations of post-first-stike and post-exchange ratios of nuclear weapons (see, e.g., Davis, 1992, which deals with the associated problems of crisis termination).

Abstracting from the Decision-Modeling Approach: A Success Tree for Deterrence

The decision-modeling approach can be quite rich, building in highly specific information about a particular leader or group of leaders and about the context in which the decisions are being made. For the purposes of this paper, however, let us instead skip the decision modeling itself and leap to a more abstract representation of what emerges as a view about how to affect a decision about invasion.

Figure G.3.4 provides an overview representation in the form of a "success tree" showing the determinants of a "good" decision (not to invade) as a hierarchy of variables, the highest-level factors of which are as follows:

- The absence of strong incentives for aggression;[13]
- Mutual respect, commonality of interests, cultural factors, and tradition (e.g., a U.S. invasion of Canada or a French invasion of the Netherlands is "unthinkable");
- Respect for international norms, notably including the prohibition on military actions that violate another nation's borders, except under highly circumscribed conditions;
- Fear of military defeat, a fear affected by the defender's and protector's military capabilities and readiness, their perceived will, and uncertainties affecting risk;
- Fear of consequences in terms of long, difficult, and costly operations, even if successful; and
- Fear of consequence in terms of longer-term punishment:

—Through near-term military actions (e.g., bombing of the aggressor's military forces, military infrastructure, or political and economic structure);

[13] Within a decision model the absence of strong incentives has at least two important effects. First, it means that the assessment of the aggressive options will be less enthusiastically positive than otherwise. Second, it means that the way in which benefits and risks are traded off will be different, with the modeled adversary being more risk-averse than if he had strong incentives, especially a sense of severe threat or a sense of the status quo being altogether unacceptable (perhaps because of grandiose ambitions). In our modeling of decisions we include in the trade-off of benefits and risks explicit psychology-based representations of how humans change their trade-off calculus depending on their incentives or compulsions.

—Through longer-term military actions (e.g., blockades, suppression of air force and army movements);
—Through political and economic actions: sanctions, boycotts, exclusion from "clubs". . . lost opportunities . . .; and
—Through publicity (international radio, television, newspapers, and the World Wide Web).

I have used the success-tree approach (or its cousin, the fault-tree approach) successfully in a number of strategic studies and models over the last decade. One of its primary virtues is that it highlights visually the various components of the problem on which one may wish to focus while developing strategy, i.e., while identifying ways to influence decisions and actions by one's opponent. A second virtue is that it encourages comprehensiveness and integrativeness (although, in practice, something is usually omitted through inadvertence or misjudgment).

The hierarchical structuring is also important because it demonstrates how one can deal with the analyst's chronic nightmare, the *curse of dimensionality.* The cosmic issues often depend on a vast number of variables, which makes analysis and convergent reasoning very difficult. However, by representing the variables as appearing at different levels of a hierarchy, one is essentially specifying a top-down way to analyze the problem: one starts at a high

Figure G.3.4 Success tree for deterrence seen as a decision.

[14] There are a number of studies describing this approach applied to nuclear escalation and de-escalation (Davis, 1992) and conventional deterrence (Davis and Arquilla, 1991a,b; Davis, 1994b). The early work included building, within a global analytic war game, large-scale artificial intelligence models of Soviet and American decision making in conventional and nuclear crises. Recently, computerized models based on the approach have been developed and demonstrated in Germany (Helling and Niemeyer, 1995).

(relatively abstract) level, works at that level until one runs into difficulties, and then goes to the next level of detail as necessary to understand issues and circumstances. This continues recursively to whatever depth is necessary. Such an approach is useful for simplifying discussion. It is also a natural basis for formal decision modeling. [14]

Discussion

To summarize, there are some useful methods for thinking about deterrence (and other issues such as proliferation) in terms of the decision making of human beings. They encourage us to identify key variables, to order them hierarchically, to identify options, and to assess how, under different mindsets, foreign leaders might evaluate the most likely, best-case, and worst-case outcomes of those options. This can be a systematic way of addressing the issues. Figure G.3.4 is a more abstract representation of the determinants of deterrence, but it can be used as a kind of checklist in thinking about more specific decisions and decision variables. Against this background, let us now turn to what might constitute the principles of good strategy.

DETERRING STRONG NEIGHBORS: STRATEGIES FOR WEAK OR MEDIUM-STRONG STATES

Potential Insights from a Decision-Modeling Perspective

If one takes a decision-modeling perspective, what kinds of insights emerge about how weak or medium-strong states might deter strong neighbors? What kinds of advice might be given to states such as Kuwait, Ukraine, Poland, Taiwan, or a unified Korea in the shadow of China? What advice might be given to even weaker states such as Lithuania, Estonia, and Latvia? In what follows I list the insights that appear to be most important. Many of these could have been derived from a more standard political science/international relations perspective, and I make no claims about the results being unique. At the same time, my experience is that by taking a decision-modeling perspective and attempting to be realistic about how real human beings make decisions, one finds oneself taking much more seriously than otherwise a number of "soft" factors that are consistently ignored or brushed aside in most discussions of deterrence. These include factors such as the "feelings" that the nations at issue have toward one another and the particular objectives and values of individual leaders or groups of leaders, which may have little to do with the objectives and values of their publics.

In any case, Figure G.3.4 summarizes high-level variables important in a decision-modeling perspective, and if we start from the left and move rightward, the following insights come to mind. They are provided here in the form of advice to weak or medium-strong states.

Minimize Incentives for Invasion or Coercion

Perhaps the most obvious suggestion is to avoid unnecessarily making an enemy of a strong neighbor and, instead, to take measures to eliminate sources of difficulty. Thus, the suggestions here would be as follows:

- "Respect" your strong neighbor.
- Do not threaten its major interests and do not permit provocative actions (e.g., against ethnic minorities with whom the neighbor is in sympathy). Appreciate the politics of your neighbor's country when assessing whether stances or actions are provocative.
- Increase interdependence.
- Defuse "dangerous ideas," both over time and when they arise in specific troublesome contexts.

The issue of "dangerous ideas" merits special discussion because it is seldom discussed. What I have in mind here ranges from formal religious and otherwise ideological teachings that encourage and perpetuate prejudice and hatred (e.g., teachings about Israel and Jews that can be found in Arab schoolbooks) to misconceptions that are important in particular crises. As an example here, when Yugoslavia began to fall apart, one factor influencing Western Europeans and Americans to stand aside was the widespread and fatalistic notion that the people of the Balkans were backward, tribally oriented, highly disputatious, and still fired with the same ethnic hatreds as in the early part of the century. Civil war might be unfortunate, but it was allegedly inevitable. Would history have been different had Western political leaders and citizenries seen the Balkan people as "real people" who had in fact been living together for many years with substantial suppression of the ancient hatreds? It is impossible to say, but the Western misimpressions were not helpful. They were dangerous ideas that might have been defused by a public relations campaign

Lay the Groundwork for Favorable Moral and Cultural Considerations

Eliminating sore points is important, but building positive feelings is at least equally so. Interdependence and continual close contact guarantee nothing (in principle they could increase hatreds) but by and large, they help create good relations. The obvious suggestions here are as follows:

- Deal frequently and openly with your neighbor, rather than maintaining an arms-length posture and fostering misperceptions.
- Encourage cultural exchanges and cooperative ventures.
- Attempt to draw your neighbor into organizations and forums that focus on high-minded considerations, repeat the principles of international relations constantly, and lead to joint efforts to solve regional problems.

If Feasible, Maintain a Substantial Defense with Allies

Eliminating incentives for aggression and improving relations are fundamental to improving general deterrence (to the point at which aggression is so "unthinkable" that it is not thought of as something to be deterred). For countries that have a choice, however, there is no substitute for defense, because circumstances and intentions change. The suggestions here go beyond the obvious by specifically highlighting the need to avoid "holes" in the defense. Defense should not be thought of as a "political" issue, but rather a military issue. It is not enough to have an army; a nation also needs to have a sensible strategy, properly prepared forces, and preparations that anticipate clever attacks by the adversary. The admonitions, then, are the following:

- Have a visibly competent defense, even if weak-—one that would exact a price and assure against a coup d'état.
- Worry about information warfare and related coups d'état, not just straightforward invasions with stereotyped battles. Avoid rigid defenses that could be bypassed or defeated quickly. Remember that wars have often been won by aggressors who did *not* enjoy a strongly favorable balance of power, but whose leaders were willing to take risks.
- Especially when faced with an aggressively oriented *personality* as the neighbor's leader, maintain high readiness and do not hesitate in a crisis to raise readiness further.[15] Do not imagine that such leaders reason in the same "pragmatic" way as normal leaders or that they merely seek incremental changes.

[15] See Ronfeldt (1994) for an interesting discussion of the kind of malignant personality that has caused a great deal of trouble historically. He refers to the hubris-nemesis complex, drawing on mythological and literary allusions. Saddam Hussein and Serbia's Slobodan Milosevic fit the pattern. Psychiatrist and professor Jerrold Post has worked on such matters for years, much of it with the Central Intelligence Agency where he did personality profiling. See Olmsted (1994) for a semipopular discussion of profiling in government, including Post's. See Davis and Arquilla (1991b) for the author's cut at such matters.

- Encourage an armed population and prepare for a defense in depth that could exploit an area (including urban, jungle, and forested areas).
- But, to avoid creating provocations or incentives for invasion, develop a defensive posture with minimal capability for aggressive operations over large distances. The criteria here include logistics as well as forces.
- Invest first in ground-based air defenses and lethal indirect-fire systems, rather than, say, high-technology high-prestige air forces that would probably not survive more than a day against a strong neighbor's air forces.
- Have powerful allies and, preferably, formal agreements, perhaps including the neighbor.
- Use, but try to avoid depending on, collective-security arrangements.
- Encourage forward deployment of allied forces, even to the point of prepositioning of material and allowing in-country forces under one rubric or another, since such actions affect the perceived will and capability of allies and greatly enhance practical capability. Encourage joint exercises to make ties stronger and visible. Recognize that over the-horizon capabilities cannot be redeployed overnight.

Encouraging forward deployment may be a bitter pill politically, but there is no adequate substitute for assuring that one's allies will be perceived as committed.

Use Arms Control to Enhance Military Security and Political Relationships

One of the most fruitful classes of measures generically appears to be arms control focused on how forces are located and postured, rather than on their precise size and configuration. Many proposals for arms control can be counterproductive, but others can substantially improve stability. In particular:

- Seek "operational arms control" agreements to limit and constrain military postures so as to make surprise attack more difficult and defense easier (Davis, 1988).

  More controversial is the idea of *nonoffensive defense:*
- Seek formal or informal arms control agreements having the effect of shifting emphasis toward force structures and postures with a lower

percentage of "offensive" weapons, notably tanks[16] and related support logistics (Møller, 1995).

Don't See Nuclear Weapons as a Panacea

It is difficult to argue from some high moral position that a weak state faced with a large and worrisome neighbor should not have nuclear weapons. Indeed, thoughtful American presidents have for decades chosen to quietly tolerate nuclear activities by Israel. It may have been hypocritical at one level, but the ultimate judgment was sound. The question is how far should this go? Again, what advice would an honest and objective strategist give to a weak, or even a medium-strong, state?

I admit ambivalence and, on bad days, some fatalism about proliferation. Mearsheimer and others arguing the case for the stabilizing role of nuclear weapons have a point (Mearsheimer, 1990). However, the following arguments in the form of advice appear to me persuasive on balance:[17]

- Nuclear weapons will assuredly ***create*** problems and may or may not solve the security problem. Also, be very skeptical about claims that conventional deterrence is infeasible. Unless the neighbor has strong incentives for invasion, a moderate defense may very well be adequate. Over time, historical and cultural factors will improve general deterrence further.
- Having nuclear weapons guarantees that you will be seen as a threat and targeted in detail by your strong neighbor. In a confusing crisis the urge to "preempt" or to engage in preventive war might be very high for the neighbor.
- Making nuclear weapons survivable is extremely difficult for most states. Even supposedly secure facilities (hardened silos, missiles in caves, etc.) are subject to attacks by special operations forces and missiles or aircraft with specialized weapons. Command and control is likely to be far more vulnerable in reality than its owners will admit.

[16] The subject of nonoffensive defenses is complex. See, for example, Huber (1990) and Huber and Avenhaus (1993). Recent work (NATO, 1995) tends to dim hopes for finding distinctions between offensive and defensive weapons. For example, it gives simulation results undercutting claims that infantry is more stabilizing than tanks, at least in tacticallevel engagements. Nonetheless, there are clear differences at the operational and strategic levels between force structures suited or not suited to large-scale offensives. Further, it is difficult for a weak or medium-strong state to have a force structure that truly threatens a strong neighbor. All this suggests that any negotiation of nonoffensive defense concepts should not focus unduly on weapon-level formulas.

[17] These extend points developed in the spring of 1993 for lectures in Ukraine on defense planning.

- Controlling nuclear weapons is a nontrivial challenge and could be a critical factor if internal conflicts arise (civil war, a military coup, terrorist events).
- To a greater or lesser extent, ownership of nuclear weapons will impose costs. The nuclear-club states, and indeed the Nonproliferation Treaty states more generally, will discriminate-not completely because of their own self interest, but to some extent, which could be expensive and humiliating. Bucking the system in this respect will make being in "the club" of developed states more difficult.[18]
- Do not imagine that actually using nuclear weapons is so easy as proponents of nuclear deterrence theory sometimes seem to suggest. If one uses nuclear weapons against a neighbor's city, the response will be annihilation. Nuclear weapons arguably do nothing but deter nuclear use. Do you imagine yourself truly capable of a "Samson option?"

None of these arguments is ultimately compelling, but they seem persuasive in most cases of practical interest. Israel still appears to be the obvious exception, primarily because it is so small and its neighbors remain strongly and implacably hostile, despite the continuing peace process, which may change this in time. In a situation where religious or ethnic-hatred issues reign, we should not expect the normal rules of conventional deterrence to apply readily. Ideologues are willing to take greater risks, greater casualties, and even losses in pursuit of their goals.[19]

EXTENDING DETERRENCE IN DEFENSE OF WEAK OR MEDIUMSTRONG STATES

Let us next turn to what major states can do to extend deterrence to weak or medium-strong states. The challenges are great, but there are nonetheless some principles.

Recognize and Express Interests, Including Less-than-vital Interests, Explicitly and Credibly

The recurring problem here has been that nations have been ambivalent in peacetime about whether to get involved in events elsewhere, especially in the absence of an immediate threat, and especially when "getting involved" could

[18] One of the major factors that influenced Sweden to quit its nuclear weapons program was apparently the desire to be part of the "good-guy club." The issues were both practical and matters of self-image. See Cole (1994).

[19] See Dror (1971) for an early discussion of this and other nonstandard threats such as terrorism.

antagonize another nation with which better rather than poorer relations are desired. This was the problem with the United States deterring Iraqi invasion. We see the same kinds of issues arising today in debates about NATO expansion. NATO expansion could, on the one hand, fill vacuums and establish the interests of the West in the continued security of various eastern and Central European states. On the other hand, it could antagonize Russia and provide fuel for the dangerous Russian nationalist movement.

Interestingly, even the "aggressive" proponents of NATO expansion have so far limited their goals to countries such as Poland. But what about Ukraine and the Baltic states? On the one hand, it is difficult to imagine NATO defending these states in a traditional manner. It is also clear that NATO's interests in Ukraine and the Baltic states are less than "vital." I would argue, however, that aggression against either of them would be altogether unacceptable in the modern world and that their security is very much a matter of NATO interest. Strategy, then, would include expressing those interests frequently.

Prepare Politically and Militarily for Prompt Intervention Given Strategic Warning

If there is a single fatal flaw in extended deterrent strategies based on decisive military moves in a crisis, it is that democracies have a great deal of trouble being decisive in ambiguous circumstances. Even "obviously" prudent military measures such as prepositioning military forces in the region and enhancing states of readiness for deployment are often politically difficult because of concerns about provocation or escalation of tensions.[20]

Such difficulties could perhaps be greatly mitigated by facing up to them in peacetime and developing much of the necessary political consensus, both domestically and politically, by including appropriate people in seriously conducted crisis games. Then, upon receiving strategic warning of a real crisis, the key people (including legislators and major allied leaders) could be brought into such gaming early so that they could themselves work through the logic for acting rather than dissembling. If this were successful, leaders such as the U.S. president could take appropriate hedging measures without being savagely attacked on the political front.

Beware of "Deterrent Actions" Without Backup

Many of those who would support early intervention to deter invasion of weak states or debacles such as in the Balkans tend to assume that a clear show

[20] A good example of this is the refusal by General Colin Powell to deploy American maritime prepositioning ships from Diego Garcia and elsewhere when strategic warning existed of a possible Iraqi invasion of Kuwait. Apparently, Powell felt that such a move would potentially be a step toward commitment of U.S. forces to a war that did not yet have any political consensus and which did not merit U.S. intervention (Woodward, 1991).

of force would suffice. Often, however, their "clear show of force" would be long on show and short on capability. This is inherently dangerous when the object of attention is a strong and aggressive personality willing to take risks. Such figures tend to be impressed by power, not empty threats. And, indeed, shows of strength by Western European nations or NATO might well be empty because there might not be the political support for going further. An important distinction here is shows of force that do and do not put that force in harm's way, with the latter being far more effective than the former because they reduce the room for dithering if war begins. To put it differently, there is still a role for trip wires. However, when dealing with risk-taking aggressors, wise leaders will not deploy trip wires without starting the process of providing massive follow up. Military conservatism on this score is well justified.

Enhance the Credibility of Defense with Forward Presence

Continuing the theme of the importance of communicating credibly the willingness to fight, it seems important to increase rather than decrease forward deployments, preferably in forms that cannot be readily bypassed.

Important alternatives to permanent stationing of trip wires include (1) prepositioning equipment in the country at issue to permit rapid reinforcement in crisis; (2) creating other infrastructure to facilitate rapid reinforcement; (3) conducting frequent joint exercises in the country to remind everyone of security ties, even if informal; and (4) maintaining naval and air forces in the region.

Plan to Supplement the Defender's Defenses Quickly and Optimally

If we turn from abstractions to specifics, considering the real or virtual threat to a particular weak or middle-strength state, it is usually the case that quick substantial enhancements of defense capability are possible if merely the right basis is laid in advance. This, however, may involve extensive coordination in the realm of command and control, logistics, and combined operations. Further, it may involve deploying tailored capabilities, some of them in short supply, rather than mere masses of equipment. Often, "smart" intervention is likely to mean providing air forces with precision-strike capability and superb theater-level reconnaissance and intelligence capabilities, along with the necessary command and control to exploit it.

Another form of "smart" intervention might be to supplement the defender's forces with high-quality indirect fire weapons that would greatly increase the vulnerability of attacker tanks and permit a kind of defense in depth (see also Kelley, Fox, and Wilson, 1994)

Deter Use of Weapons of Mass Destruction

An important element of extended deterrence is avoiding self-deterrence, as well as coercion of regional allies. The problem, again, is weapons of mass

destruction (WMD). Although defense against the WMD threat is essential, the preferred strategy here is to *deter* use of WMD, essentially by credibly threatening massive response (see, e.g., Gompert, Watman, and Wilkening, 1995). With today's precision weapons, such a response could be conventional. Further, it could have a "countervalue" or "counterforce" character, depending on needs. Countervalue attacks could be quite discriminating.

Use Arms Control and Other International Mechanisms to Limit Forces and Constrain Force Postures in Ways Promoting Stability

Here there is a complete commonality with the advice offered to countries concerned about direct deterrence. Operational arms control in particular (e.g., limits on the deployment locations and states of readiness) of forces can drastically alter the quality of strategic warning, even to the point of making justified preemptive attacks plausible. This, in turn, is becoming increasingly important as the result of the proliferation of weapons of mass destruction and missiles: were the United States to intervene in a regional crisis 5 or 10 years from now, there might be a high premium on early and decisive counterforce attacks on the aggressor's means for delivering nuclear, chemical, and biological weapons.

Develop Theater Missile Defenses

WMD issues are becoming so important that it seems clear that defenses against WMD are now essential. In this context defense includes counterforce, post-boost intercept, terminal intercept, and passive measures such as dispersal and hardening. Without such defenses, the option for intervention and, therefore, the credibility of extended deterrence may be severely undercut.

Seek Alternatives to Current U.N. Mechanisms

With very few exceptions, it seems exceedingly unlikely that the United States or its allies will be willing to intervene in regional conflicts without clear legitimacy in the international community. Unfortunately, the United Nations currently is incompetent in dealing with military crises, especially when competence includes speediness and decisiveness in circumstances of ambiguity. Further, the prospect of depending on U.N. military operations, as distinct from U.N.-sanctioned operations led by the United States or some other major power, should be sobering for anyone thinking about the challenges of successful immediate deterrence. The major nations need to develop alternative ways of legitimizing and conducting the necessary actions. Ideally, this would mean changes within the U.N. structure and decision making, but that may not prove feasible.

RECOGNIZING THAT IMMEDIATE EXTENDED DETERRENCE MAY FAIL

A key element of deterrence planning should be recognition that immediate deterrence, however important, is a slender reed on which to base security. Immediate deterrence has failed too many times in the past, and the reasons for it having failed are still salient. It follows that in addition to plans for military and other measures in a crisis, an overall strategy of extended deterrence should:

- Seek to accomplish as much as possible through *general* extended deterrence-e.g., creation of security ties, interdependence, etc.; also, reduction of the causes of conflict.
- Make it plain (e.g., through prior security agreements) that aggressors will be severely punished by the international community, whether or not their invasions are successful. The punishments could be military (including countervalue attacks), political (pariah-state status), and/or economic (e.g., isolation), but they should be certain and tough, even if not perfectly enforced.
- Punishment options should be tailored to address what matters to the decision makers of interest.
- Military planning should recognize the potential necessity of operations to restore lost territory, perhaps over a period of many months or years, and perhaps with operations launched over many hundreds of kilometers away because of the original invasion having been successful and established defenses. Potential aggressors should not believe that a quick success ends the game.

Punishment as a Strategic Option

Because immediate deterrence may fail, especially with respect to attacks on weak or medium-strong states, defense of which does not represent vital interests of potential protectors, the United States and the civilized and forward-looking world community as a whole should worry more about developing and advertising credible options for severely punishing aggressor states-not just in the immediate aftermath of an attack, but for many years thereafter. Perhaps the metaphor should be of "putting aggressor states in jail" for terms of, say, 5 to 10 years. In other instances, an appropriate response might include military attacks to destroy substantial portions of the aggressor's military forces or infrastructure (e.g., its navy) or appropriate elements of the civilian value structure, all with conventional weapons. With sufficiently high accuracy and targeting, such attacks could be relatively discriminative. The attacks could be one-time events, "punishment," but not the start of a continuing war. There need be no quagmire.

The principal issue here is that of credibility. Would the world community or leader states punish militarily a successful aggressor that also possessed nuclear capabilities and the means to delivery nuclear weapons against their own countries (either by missiles or by terrorists smuggling devices into them)? The initial reaction of many observers is "decidedly not," unless there were vital interests at stake. Although the argument is plain enough, its implications seem puzzling in instances in which the potential punisher states have escalation dominance in every dimension and the aggressor is rational, however unpleasant. Certainly, military punishment options would be risky, but the long-run stakes could be high.

The argument is unlikely to be resolved, but a few observations appear to be objectively valid. In particular, *general* deterrence by threat of punishment options could be much enhanced by (1) missile defenses; (2) well-exercised and advertised military *options* for selective but severe punishment, coupled into long-term isolation activities politically and militarily; and (3) pooling of risk by international cooperation (e.g., a punishment option by NATO might be better than a punishment option only by the United States).

This enhancement of general deterrence seems to be a good investment. Enhancement of immediate deterrence through threat of punishment will be a risky proposition, but competition in risk taking is hardly a new issue.

CONCLUSIONS: CHALLENGES FOR SECURITY STRATEGY, DEFENSE PLANNING, AND CRISIS DECISION MAKING

What, then, can be said in summary about deterrence in defense of weak states, especially when one takes the perspective that deterrence is ultimately about influencing decisions? The principal conclusions of this paper are as follows:

- Successful deterrence depends on a net assessment by human decision makers of many different factors. The "soft" factors, such as the quality of relations between the states in question, matter as much as the "harder," military factors.
- Conventional deterrence should not in most instances be particularly difficult for medium-strong states so long as they can deny the potential invader high confidence in a quick and relatively painless victory. The principal exception is when the potential invader sees compelling stakes, usually in the form of a very serious threat to itself. The stakes may be "personal" rather than national, which implies the need to model the leaders as well as the situation.
- The ingredients of a deterrent defense include avoiding major vulnerabilities such as vulnerability to surprise attack, attack from a

nonstandard direction, or a sudden breakthrough of a brittle front line with no depth.

Although nuclear capability could enhance deterrence, it is also likely in most instances to excacerbate tensions and assure that careful military plans will be laid for attack. Nuclear capabilities are likely to be vulnerable and therefore might be destabilizing in a crisis.

- Nations such as the United States and its major allies can extend conventional deterrence to less-than-vital interests, but it is not trivial to do so. Tactics that can help include forward-basing, prepositioning, joint exercises to supplement the defender's capabilities with specialized high-leverage capabilities such as air power, precision strike, and information dominance.
- The likely effectiveness of conventional deterrence and extended conventional deterrence could be greatly enhanced by "operational arms control" constraining the location and readiness of offensively capable forces. Arms control could also help shepherd the movement of force structures toward compositions more suitable for defense of borders and internal-security actions than for long-distance offensive force projection.
- Because immediate deterrence will not always work, especially if it depends on denial capability or prompt actions such as the dispatch of trip wires backed up by protector states, the United States and the international community more generally need to focus more on the development of credible and effective punishment options. These should include the ability to destroy both military and civilian infrastructure, as well as military forces, but they should also consider mechanisms for highly certain political and economic isolation (e.g., prior agreement within regional security frameworks to punish aggressors in such ways).
- Extended deterrence's credibility will depend increasingly on the ability of the protector states to trump threatened use of weapons of mass destruction. The trumps may include the threat of massive conventional retaliation, nuclear retaliation, preemption against WMD and delivery means, and the capacity to defend forces and allied countries, at least significantly, with missile defenses.
- When thinking both of general and extended deterrence, it is fruitful to model the reasoning of the states to be deterred, developing alternative models to reflect different mind sets that may well be at work. Such models can be very helpful in assessing alternative strategies by making it easier to understand their likely and possible effects on the

thinking of human beings with personal agendas, many misperceptions, and a range of options that include not invading.

BIBLIOGRAPHY

Allan, Charles T. (1994), "Post-Cold War Deterrence", a research survey, *Washington Quarterly* , Vol. 17, No. 3 (Summer) .

Arquilla, John (1992), *Dubious Battles: Aggression, Defeat, and the International System* , Crane-Russak, Washington, D.C.

Arquilla, John (1995), "Bound to Fail: Regional Deterrence After the Cold War," *Comparative Strategy* , Vol. 14, No. 2 (April-June) .

Arquilla, John, and Paul K. Davis (1994), *Modeling Decisionmaking of Potential Proliferators as Part of Developing Counterproliferation Strategies* , MR-467, Rand, Santa Monica, California.

Asmus, Ronald, Richard Kugler, and F. Stephen Larabee (1995), *NA TO Expansion: The Next Steps* , Rand, Santa Monica, California.

Bennett, Bruce, Sam Gardiner, and Daniel Fox (1994), "Not Merely Preparing for the Last War," Chapter 15 of Davis (1994b).

Blainey, Geoffrey (1973), *The Causes of War* , The Free Press, Macmillan Publishing Co., New York.

Cimbala, Stephen (1992), *Force and Diplomacy in the Future* , Praeger, New York.

Cole, Paul (1994), *The Conduct of a Nuclear-Capable Nation Without Nuclear Weapons: Sweden Without the Bomb* , MR-460, Rand, Santa Monica, California.

Davis, Paul K. (1987), "A New Analytic Technique for the Study of Deterrence, Escalation Control, and War Termination," in Stephen Cimbala (ed.), *Artificial Intelligence and National Security* , Lexington Books, D.C. Heath and Co., Lexington, Massachusetts.

Davis, Paul K. (1988), *Toward a Conceptual Framework for Operational Arms Control in Europe's Central Region* , R-3704-USDP, Rand, Santa Monica, California.

Davis, Paul K. (1992), "Behavioral Factors in Terminating Superpower War," in Stephen Cimbala and Sidney R. Waldman (eds.), *Controlling and Ending Conflict: Issues Before and After the Cold War* , Greenwood Press, New York.

Davis, Paul K. (1994a), "Improving Deterrence in the Post Cold-War Era: Some Theory and Implications for Defense Planning," Chapter 8 in Davis (1994b).

Davis, Paul K. (ed.) (1994b), *New Challenges in Defense Planning: Rethinking How Much Is Enough* , Rand, Santa Monica, California.

Davis, Paul K. (1994c), "Protecting the Great Transition," Chapter 6 in Davis (1994b).

Davis, Paul K. (1994d), "Planning for Adaptiveness," Chapter 4 in Davis (1994b).

Davis, Paul K. and John Arquilla (1991a), *Thinking About Opponent Behavior in Crisis and Conflict: A Generic Model for Analysis and Group Discussion* , N-3322-JS, Rand, Santa Monica, California.

Davis, Paul K. and John Arquilla (1991b), *Deterring and Coercing Opponents in Crisis: Lessons from the War with Saddam Hussein* , R-4111-JS, Rand, Santa Monica, California.

Davis, Paul K. and Lou Finch (1993), *Defense Planning in the Post Cold-War Era: Giving Meaning to Flexibility, Adaptiveness, and Robustness of Capability* , Rand, Santa Monica, California.

Doyle, Michael (1995), Correspondence, *International Security* , Vol. 19, No. 4 (Spring) .

Dror, Yehezkel (1971), *Crazy States: A Counterconventional Strategic Problem* , Heath Lexington Books, D.C. Heath and Co., Lexington, Massachusetts.

Gompert, David (1994), "How to Defeat Serbia", *Foreign Affairs ,* Vol. 73, No. 1 .

Gompert, David, Kenneth Watman, and Dean Wilkening (1995), *US. Nuclear Declaratory Policy ,* MR-596, Rand, Santa Monica, California.

Helling, Klaus and Björn Niemeyer *(1995), Risikoverhalten in Krisensituationen (RiskTaking Behaviour in Crisis Situations) ,* Institute für Angewandte Systemforschung und Operations Research, Universität der Bundeswehr, Munich, Germany.

Howard, Michael (1984), *The Causes of Wars ,* Harvard University Press, Cambridge, Massachusetts.

Huber, Reiner K. (ed.) (1990), *Military Stability. Prerequisites and Analytic Requirements for Conventional Stability in Europe ,* NOMOS Verlagsgesellschaft , Baden-Baden.

Huber, Reiner K. and Rudolf Avenhaus (eds.) (1993), *International Stability in a Multipolar World ,* NOMOS Verlagsgesellschaft, Baden-Baden.

Huber, Reiner (1994), "Deterrence in Bosnia-Herzegovina: A Retrospective Analysis of Military Requirements Before the War," *European Security ,* Vol. 3, No. 3 (Autumn) .

Huth, Paul (1988), *Extended Deterrence and the Prevention of War ,* Yale University Press, New Haven, Connecticut.

Huth, Paul and Bruce Russett (1988), "Deterrence Failure and Crisis Escalation," *International Studies Quarterly ,* Vol. 32, pp. 29-45 .

Jablonsky, David (1991), *Strategic Rationality Is Not Enough: Hitler and the Concept of Crazy States ,* Strategic Studies Institute, U.S. Army War College, Carlise Barracks, Pennsylvania.

Kelley, Charles, Daniel Fox, and Barry Wilson (1994), "A First Look at Defense Options for Poland," in Davis (1994b).

Kugler, Richard (1995), *Toward a Dangerous World: US. National Security Strategy for the Coming Turbulence ,* Rand, Santa Monica, California.

Layne, Christopher (1994), "Kant or Cant: The Myth of Democratic Peace," *International Security ,* Vol. 19, No. 2 (Fall) .

Mearsheimer, John (1990), "Back to the Future: Instability in Europe after the Cold War," *International Security ,* Vol. 15, No. 1 .

Mearsheimer, John (1983), *Conventional Deterrence ,* Cornell University Press, Ithaca, New York.

Møller, Bjørn (1995), "Common Security and Non-Offensive Defense: Are They Relevant for the Korean Peninsula?" presented at the International Conference of the Korean International Studies, June 16-17, Seoul. See also his book *Common Security and Non-Offensive Defence, a Neorealist Perspective ,* Lynne Rienner, Boulder Colorado, 1992.

NATO (1995), "Symposium on Coping with Uncertainty in Defense Decision Making," The Hague, January 16-19, 1995, Technical Proceedings, two volumes, Panel 7 on the Defense Applications of Operational Research, NATO Defense Research Group.

Olmstead, Thomas (1994), "Psychology and the CIA: Leaders on the Couch," *Foreign Policy ,* No. 95 (Summer) .

Ronfeldt, David (1994), *Beware the Hubris-Nemesis Complex: A Concept or Leadership Analysis ,* Rand, Santa Monica, California.

Russett, Bruce (1995), "And Yet It Moves," a correspondence item, *International Security ,* Vol. 19, No. 4 (Spring) .

Spiro, David *(1995), International Security ,* Vol. 19, No. 4 (Spring).

Watman, Kenneth and Dean Wilkening, with John Arquilla and Brian Nichiporuk (1995), *US. Regional Deterrence Strategies ,* Rand, Santa Monica, California.

Wilkening, Dean and Kenneth Watman (1995), *Deterring Nuclear Threats from Regional Adversaries* , Rand, Santa Monica, California.

Wolf, Barry (1991), *When the Weak Attack the Strong: Failures of Deterrence ,* N-261 A, Rand, Santa Monica, California.

Woodward, Bob (1991), *The Commanders ,* Simon and Schuster, New York.

Zimmerman, Warren (1995), "Origins of a Catastrophe: Memoirs of the Last American Ambassador to Yugoslavia," *Foreign Affairs ,* (March/April) .

APPENDIX H

Theater Missile Defense, National IBM Systems, and the Future of Deterrence

Richard L. Garwin, IBM Thomas J. Watson Research Center

Mch has changed over the decades in regard to the desirability of and the capability for defense against ballistic missiles. Now attention to ballistic missile defense (BMD) in the United States is directed toward theater missile defense (TMD), nominally for defense against short-and intermediate-range ballistic missiles (up to 3,000 km or so) armed with nuclear, explosive, chemical, or biological warheads.

Defense is proposed to extend to U.S. forces abroad, allied forces, and the capitals or cities of friendly or allied nations. In addition, it is proposed to use the same technology to have a light defense of U.S. territory itself against "accidental launch" by Russia, or against small attack by a so-called "rogue" state.

But much has remained the same.

CONTEXT

For three decades the United States has had no defense against the nuclear armed ballistic missile force of the Soviet Union, relying instead on deterrence by threat of nuclear retaliation. Repeatedly we made an effort to structure an effective defense, but the sole deployment decision (Safeguard) ultimately promised no effective defense even of our strategic offensive force, but rather provided a testbed to perfect the antiballistic missile (ABM) software.

Nevertheless, had it been technically feasible to deploy a highly effective and durable ABM, we would have chosen to do so. And had the Soviet Union been able to field an "effective" ABM, the United States would have responded by expanding its missile force to overwhelm the defense, enhancing the force with penetration aids to defeat the defense, or underflying or bypassing the defense with cruise missiles, bombers, or other nonballistic missiles. Of course, a truly dominant defense that could not be overcome, underflown, or otherwise bypassed would be another matter entirely.

The no-ABM case is simple to analyze—on both sides. Its perceived problems include the clear reliance on deterrence of attack by threat of retaliation rather than on protection in case of attack—hence vulnerability to accidental or unauthorized launch. However, deterrence by means of retaliation can be defeated only by defenses that counter all the means of destruction and penetration available to the other side. It is essential to understand that military systems have to deal with an intelligent adversary rather than a predefined threat; the perfect ABM may fail catastrophically, or it might be bypassed.

An antiballistic missile defense with the goal of denying the other side's deterrence by means of nuclear retaliation against the society itself—population and industry—has an extraordinarily difficult task. Fundamentally, this difficulty arises because the enormous destructive power of a nuclear weapon means that a half-megaton weapon could kill a half million people; a weapon plus delivery system costing $10 million to $100 million could destroy value on the order of $500 billion (assuming $1 million per life). Another metric compares how much it costs the offense to overcome the defense and, ultimately, the cost exchange ratio between offense and defense—not for holding the damage precisely constant, but retaining a similar magnitude of damage.

In general, defense can be very costly if the requirement is to maintain near-perfect protection against a responsive adversary. The offense, for instance, can choose the specific target; can exhaust the local defense with warheads, dummies, or decoys; or can use enough weapons to leak through the imperfections if not to overwhelm the defense; or can attack the defense specifically ("the eyes of the system," for instance, which are often more fragile or more visible than the targets themselves).

This essay is not itself a book on the future of deterrence and warfare, centered on missile defense; rather, it is a sketch of the current situation regarding tactical and strategic missile defense, with indications of the relationship to deterrence and warfare.

BACKGROUND

This essay is informed by the author's involvement with strategic offensive and defensive forces since 1952 and with every successive generation of proposal or deployment of ballistic missile defenses.

Indeed, the revolution in microelectronics, radio frequency technology, and signal processing has wrought a revolution in the reliability and effectiveness of radar detection of objects in space or in the atmosphere, and this has been augmented by major advances in optical detection capability both in the visible and the infrared (IR).

So it is commonplace in the United States or elsewhere to read about or to see videos and photographs of test intercepts taking place in the vacuum of space, or in the atmosphere.

In the 1950s or thereabouts, effective intercept could be conceived only with a nuclear-armed interceptor, and the one strategic ABM system briefly deployed in the United States (Safeguard) was equipped with low-yield nuclear warheads on its short-range interceptor. The exo-atmospheric interceptor was to be equipped with a multimegaton warhead not only to compensate for inaccuracy in intercept but also to be able to destroy spaced warheads and decoys.

But just as the detection capability has improved, so has the ability to conceal the target (stealth), to mimic the target (especially with the aid of antisimulation), and to jam the detection radars or the fuze of the interceptor itself. These techniques have been explored quite thoroughly by the United States for strategic missiles, and some of them for aircraft, but it is not clear how well perfected they are for short-range or tactical ballistic missiles.

In addition to the pure BMD systems, initially derived in any case from the army surface-to-air missile systems (SAMs), dual-purpose systems have been in favor especially for theater defense. Thus the Patriot that saw service in Israel and Saudi Arabia in 1991 was fielded primarily as a SAM system and not an ABM system.

Much has been written about the performance of the Patriot, beginning with the claim of essentially hundred percent "effectiveness" in countering the Scud missiles launched by Iraq. My own judgment, largely based on a close reading of the analyses of Dr. T.A. Postol and his critics, is that few, if any, warheads were destroyed or disabled by Patriot interceptors.

This would be of little import if the success of the Patriot against Scuds were not used as a baseline by many in arguing for the effectiveness of future TMD and BMD systems. To the extent that the baseline is important, these arguments fall on their face. But even if the Patriot did not work at all, this does not mean that future systems would be ineffective.

In addition to the Patriot, the Soviet (now Russian) SA-10, SA-12, and S300 systems could have some capability against ballistic missiles. How good a capability? And how good is good enough?

THE PROBLEM

The problem is not to "hit a bullet with a bullet," a problem that was solved long ago. That requires only detecting the incoming "bullet" at a sufficient standoff to be able to get an interceptor into its neighborhood before impact (or perhaps before reentry into the atmosphere), and guiding the interceptor so that it arrives with sufficient precision to a point on the trajectory of the incoming warhead (and at the correct time) to collide with or for the interceptor warhead to explode so as to destroy or disable the incoming warhead.

Intercept is easier if the interceptor can climb along the inverse trajectory, in which case precise control of its velocity is less important to the success of the intercept. Otherwise, for "crossing intercepts" the interceptor must be steered as a function of its velocity and drag to make the intercept at one point or another along the trajectory of the incoming missile.

A major problem for intercepts outside the atmosphere is that it costs very little for the offense to provide "penetration aids" or countermeasures, particularly simple against non-nuclear interceptors.

For instance, a large balloon surrounding the reentry vehicle or missile would deny the interceptor the ability to detect precisely the location of the

vulnerable warhead within the balloon.[1] A smaller balloon around the warhead accompanied by other balloons at some distance (either tethered or free flying) would require the defense to destroy all of these with interceptors, or to have some preliminary balloon-destroying interceptor followed by an assessment and intercept of the real warhead, or to attempt to discriminate between the balloon containing the warhead and the balloons that are empty. These particular penetration aids are simple only when the light and heavy objects are all in "free fall" and they would be inapplicable to maneuvering portions of the trajectory or within the atmosphere.

The "counter countermeasure" of the defense could be this required enhanced discrimination capability, but that is an extremely fragile option. At the very least, electrical heaters on the balloons could mimic the residual heat from a warhead to confound infrared sensors, as a counter counter countermeasure to this response.

But a much more powerful penetration aid is to be found in the technique of "antisimulation" in which the warheads themselves are given a broad spectrum of observables, in order to make them easier to mimic by inexpensive decoys.

Of course one could imagine an adversary with sufficient blindness and specific limitations in technology to be able to buy or make ballistic missiles and their warheads, but with a peculiar inability to make these penetration aids.

I don't think so.

In view of the ease of countering intercept outside the atmosphere, most of the serious proposals for intercept deal with the incoming warhead during the reentry phase, when light balloons are stripped away by atmospheric drag, and the dynamic pressure makes it more difficult to mount penetration aids on the warhead itself.

But such endo-atmospheric intercept poses its own problems for the defense (especially for interceptors not armed with nuclear warheads) since the trajectory of the threat is affected by drag, and because the threat has now the option of substantial maneuvers, by interaction with the very dynamic pressure that causes the drag. If the missile is very accurate, the preservation of that accuracy while incorporating "substantial maneuvers" can be a serious problem, however.

Similarly, the extrapolated position of the interceptor is affected by its own drag, and the control is not so simple as it is in the exo-atmospheric intercept. Still, successful endo-atmospheric intercepts have been made in tests, either with fragment-kill warheads or hit-to-kill warheads. These latter make use of the fact that each gram of an interceptor at 6 km/s closing speed has some four times the energy of a gram of high explosive.

The Iraqi Scuds demonstrated this major problem associated with endoatmospheric intercept, in that the range extension of the Scud, done by the Iraqis

[1] Such a balloon, of itself, would not reduce the effectiveness of an interceptor armed with a nuclear warhead, but it would totally defeat an interceptor that was effective only in actual coalition with the offensive reentry vehicle.

themselves, involved a lengthening of the missile tank, which led to instability and breakup on reentry. Thus the incoming high-explosive warheads were maneuvering in a tight helix, while the Patriot had no specific software to help it make an intercept under those circumstances. Furthermore, it is clear that the fuzing option for the Patriot was far from optimum for the closing velocities that were involved.

The designer of the Soviet SA-10 system remarks that his system does have a more flexible fuzing option, as would any future system.

NEAR-TERM OPTIONS FOR U.S. THEATER MISSILE DEFENSE

The widely deployed 1960s-origin U.S. Army Hawk SAM system can have an option against TBM. In the 1960s it was proposed to upgrade the Hawk system for defense against Soviet SS-9 ICBMs that might be used in nuclear attacks on Minuteman silos. And they would have worked for that limited purpose. In fact, the Ballistic Missile Defense Office (BMDO—successor to the Strategic Defense Initiative Office [SDIO]) is expected to spend some $60 million to upgrade the ABM capability of the Marines Corps HAWK air defense system.

WHAT IS THE THREAT?

The military effectiveness of inaccurate high-explosive (HE) warheads against our military forces in the field is negligible. (As a case in point, the cost of perfect defense against this negligible threat is high—illustrating the strong dependence of cost of defense vs. demanded effectiveness.) Furthermore, the threat of precision HE-armed theater missiles to our forces in the field could be countered by intercepts at a kilometer distance rather than by interceptors that need to cover the entire area, at substantial expense and uncertain results. The threat of chemical or biological weapons to deployed U.S. forces is not much greater than that of HE-armed weapons, in view of the available defensive clothing and decontamination measures, and there is, for the present, no significant threat of nuclear-armed missiles. Against biological warfare (BW) and chemical warfare (CW), passive protection can be so effective that it would have a very substantial effect of deterrence by reducing the value of such weapons.

However, the threat of biological and chemical weapons against friendly cities is far from negligible, although delivery by ballistic missile is neither the greatest nor the most urgent threat, and passive protection can do much there as well. We cannot always count on people getting it as wrong as did Aum Shinrikyo in its (chemical) attack on the Tokyo subways.

As shown by the destruction produced by a 2-ton explosive blast in Oklahoma City, substantial human and property damage could be done to modern cities by even high-explosive armed Scuds or other missiles, although their impact would likely cause less damage on average than that carefully

placed van bomb. Nevertheless, a 300-kg Scud warhead destroyed the Ministry of Education building in Riyadh on January 25, 1991.

Credibility and Responsibility

During the Desert Storm operation against Iraq in 1991, it was announced by President George Bush that the effectiveness of the Patriot missile in intercepting Scuds was almost 100 percent. It seems to me that not only President Bush but also the Defense Department and the U.S. Army must have believed this, and once the words are out of the mouth of the President, there is a substantial establishment devoted to establishing their truth or reality, as was the case following the announcement of the Strategic Defense Initiative by President Ronald Reagan on March 23, 1983.

Over the years since January 1991, I have discussed Patriot performance with several diplomats and military officers of friendly countries and have learned that they overwhelmingly believe that Patriot did not conduct successful intercepts, but that it was a "political response to a political weapon" and in this regard was "very successful."

And one can hardly disregard historical facts presented, for instance, by Alexander H. Flax.[2] By late summer 1944, only one in every seven V-1 "buzz bombs" launched by Germany against England survived to their targets, but the V-2 rocket attacks had begun. During July and August, Allied air forces expended one-fourth of their total tonnage on missile-related targets, and General Dwight D. Eisenhower recounted, "It seems likely that, if the German had succeeded in perfecting and using these new weapons six months earlier than he did, our invasion of Europe would have proved exceedingly difficult, perhaps impossible."

According to Eisenhower, with the chosen ground attack routes into Europe, "In this way we would, incidentally, quickly clear the area from which the V-1 and V-2 had been consistently bombarding Southern England."

So weapons that might be better ignored (because more effective military use could be made of the resources expended against those weapons) did divert major resources and did affect decisions of the military leaders substantially.

Perhaps the claim of a highly successful Patriot system kept Israel from responding militarily against Iraq, which would have complicated the military and political situation, to say the least. But in the U.S. democracy we would be deceiving not only our citizen-bosses but also our leaders themselves if we did not tell the truth in such matters.

Although Winston Churchill remarked that "in wartime, truth is so precious that she should always be attended by a bodyguard of lies," that bodyguard is stifling not only to democracy but also to the national security unless used only where strictly necessary. In the case of Patriot as an antimissile system, insufficient provision was made for gathering information on its effectiveness.

[2] Personal communication, April 14, 1995.

When an aircraft is intercepted by Patriot, it normally crashes into the ground, but since that is the purpose of the ballistic missile, it is not so easy to tell the difference between an intercepted missile and one that has not been touched.

THE BIG PROBLEM FOR CITY DEFENSE

A problem for ballistic missile delivery of chemical weapons (CW) or biological weapons (BW) comes from the inherent difficulty of disseminating CW or BW from a reentry vehicle from a missile with a range of 500 to 3,000 km. It is far simpler to improve the military effectiveness by early release of submunitions in the ascent phase. In this way, submunitions weighing only a few kilograms or so would be released by the hundreds, to have the dispersion desired in the target area. Although desirable to the offense from the point of view of military effectiveness, this would also be an effective counter to any nonnuclear defense except that operating before launch or during the ascent phase.

Indeed, the early release of submunitions totally counters the performance of nonnuclear TMD systems thus far proposed, except those that involve fastacceleration interceptor missiles launched from close to the ballistic missile launch site so as to be able to destroy the missile during powered flight. This could be achieved by ground-emplaced interceptors (GEIs), or by launching the interceptors from orbiting aircraft, or in principle by powerful lasers in low Earth orbit, or by a large number of Brilliant Pebble interceptors in orbit.

Effective launch-phase intercept is not a simple task, since it requires intercept often within 40 s after launch. Limited in initial acceleration by the necessity to moderate the heating and dynamic pressure it would encounter in the atmosphere, a GEI nevertheless could make an effective intercept if placed within 50 km of the launch site of a typical Scud, for instance.

An air-launched interceptor of 8 km/s could move 300 km during that time, but a stealthy air vehicle or assumed air superiority might be required. Russia might not agree in principle that launch-phase intercept for TMD is compatible with the 1972 U.S.-Soviet ABM treaty, but possibly could agree on a specific system that would be permitted by an amendment to that treaty and that might be available to both sides.

As for active defense by counterforce, a recent report[3] argues that the highest payoff comes from counterforce attack against garrisons, depots, and command and control facilities; the second highest payoff from attack on transportation infrastructure and industrial facilities; and the lowest payoff from attack on mobile missiles themselves and missile launchers. This report considers the boost-phase intercept alternative, but emphasizes that it should not be viewed as primary or the preferred solution but constitutes a "mid-term to long-term capability." Although boost-phase intercept is politically difficult, I

[3] Air Force Studies Board, Counterforce Options Against Tactical Missile Systems (U). National Academy Press, Washington, D.C., 1994 (Classified).

emphasize that no midcourse or terminal capability such as those now proposed for TMD or even for national ABM systems will handle the motivating threat of BW and CW from bomblets dispersed on ascent; so it is boost-phase or nothing.[4]

The United States proposed to interpret the ABM treaty as permitting any system that had not actually been tested against targets exceeding *5* km/s—an easing of constraints that I am sure would lead the U.S. Congress to abandon the strategic arms reductions, in view of the ABM capabilities that would then be permitted and projected for Russia. A BMD capability deployed in the United States to protect against "accidental launch" would need to handle incoming reentry vehicles (RVs) of a full 7 km/s reentry speed, but a system designed for those speeds and fully tested only against a target of 5 km/s would not be inhibited by lack of testing against the RVs of 7 km/s.

Testing does not "develop" the missile system; it just challenges and perhaps verifies the model that was used to design and develop the system. Thus, the radar tracking of 7 km/s objects is verified independently of any intercept, and the IR detection by the interceptor (or the radar detection by the interceptor) is a function of interceptor speed but not adversely affected by increased target speed. As for an all-up system "proof test," that would not be available even for incoming RVs of a full 7 km/s reentry speed, unless those RVs were supplied for test by the adversary![5]

Because Russia is more threatened by accidental launch and intermediate-range missiles launched from its neighbors than is the United States, a decision by the United States to proceed with such a system would result in a comparable system in Russia, which would then cause havoc with the assured penetration of strategic ballistic missiles launched from British, French, or Chinese forces, unless those forces were modified or greatly augmented. To the extent that an ABM system depending on exo-atmospheric intercept by nonnuclear armed interceptors is deployed, countermeasures are relatively simple, and it is for that reason that such a system is not even very useful against accidental or limited attack. A commitment to ABM would, however, force those operating strategic retaliatory forces to provide effective penetration aids against endo-atmospheric intercept; for the U.S. missile forces, such "penetration aids" have been additional missiles and warheads. Indeed, there is little doubt that Russia would deploy a system of nuclear armed interceptors which would add many warheads to the Russian nuclear armory.

In the context of a theater opponent countering U.S. "high-tech" conventional military capabilities, a recent article[6] states that the "explosion of a single high-altitude low-yield nuclear weapon could destroy $14 billion worth

[4] Or preboost phase, or deterrence of launch, or passive defense.

[5] They should be asked also to supply decoys and jammers that might automatically accompany any attack, even an accidental or unauthorized one.

of low-Earth-orbit satellites that would transit through the enhanced radiation belts produced by such a nuclear event." Of course, the signing of a universal comprehensive test ban treaty would tend to prevent and certainly make illegal such an act, and one must try to find a way to make it explicit that such damage would result in dire retribution for anyone who caused it, without making excessively clear to potential troublemakers the magnitude of the damage that could be caused this way. Such retribution would be all the more legitimate if the United States and the other nuclear states emphasized their commitment not to use nuclear weapons first, so that this postulated use of nuclear weapons would damage the entire international security system, as well as the specific target of the nuclear attack.

The Threat to the United States

That there are serious objective dangers to the United States is indisputable. In 1969 a panel of the President's Science Advisory Committee (PSAC) on chemical and biological warfare was asked specifically to review for President Nixon the utility of a ban on biological weapons. Indeed, President Nixon soon issued an executive order eliminating not only U.S. use of BW, but also possession, manufacture, and even R&D on biological weaponry. This was followed quickly by the negotiation with the Soviet Union of a treaty banning BW in the same way, leading to the international Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, signed April 10, 1972, which entered into force March 26, *1975.* The Soviet Union has apparently not fully complied with the convention, and the full force of international resolve has not yet been turned to implementation of the convention and to its buttressing by means of effective societal verification.

Any use of BW by the Soviet Union against the United States was, presumably, in any case deterred by U.S. possession of nuclear weapons and their delivery capability, whether or not nuclear retaliation was specifically threatened in the case of BW attack. There is no reason to believe that such deterrence would not still work against Russia, or against most states contemplating use of BW or CW. By the same token, it is hard to see how one could deter by threat of retaliation the use of BW by terrorists. Indeed the very aspect of BW that makes it so ineffective against combat troops may paradoxically greatly increase its effectiveness against civilian populations.

This is the substantial duration (hours or days) between the ingestion of the agent and the outbreak of the illness, giving time for a modest crew to spread BW agent widely. Furthermore, although most of the BW agents contemplated by major power for use in warfare were infectious but not contagious,[7] terrorists could perfectly well use highly contagious natural agents. The main point is

[6] R.C. Webb et al., "The Commercial and Military Satellite Survivability Crisis," *Defense Electronics,* August 1995.

[7] That is, one or a few "bugs" could cause an infection in humans, but the disease would not spread with substantial probability from human to human.

that terrorists and nations (in the modern world of relatively open borders, international travel, and mixed societies) would hardly rely by choice on ballistic missiles for delivering BW as a terrorist weapon against population centers of the other side.

REGIONAL MISSILE DEFENSE IN RELATION TO THE ABM TREATY

The problem of regional missile defense, as discussed above, is not only one of effectiveness against the regional threat, but the impact of TMD on the ABM treaty deserves attention, given the magnitude of the regional threat compared with the essential nature of the ABM treaty in limiting strategic offensive arms.

There is qualitative impact as well as quantitative impact. The ABM treaty was crafted not only to prevent the existence of an effective nationwide defense against nuclear-armed strategic ballistic missile forces, but also to provide a substantial "buffer time" before such a defense could be deployed. A situation in which an ABM does not exist but in which it could be deployed the next month, would be worse, in reality, than the gradual deployment of such a defense. The very prospect of an ABM defense effective against the existing strategic offensive force would call forth penetration aids, multiple warheads, and expansion of the strategic force, until the ABM were overcome, if, indeed, it was cost effective to overcome it. But can an ABM be "overcome"?

The current generation of political leaders and strategic analysts seem to ignore the insight of the 1960s that led to the adoption of the ABM treaty and which is valid today, in essence. It recognizes that some 400 nuclear weapons reaching their targets would surely destroy the United States or the Soviet Union (and fewer would now be required to destroy Russia) as a functioning modern society. That number penetrating would constitute effective "assured destruction" and the prospect of receiving such a retaliatory strike would essentially nullify any desire to have a first strike or to dictate political surrender to the other side.

The large force of more than 10,000 strategic nuclear warheads on each side appears to have grown to that level not because that many were deemed essential for the assured destruction role, but because a large fraction of the strategic warheads might be destroyed before they could be launched in retaliation, and an additional factor entered to compensate for some ABM system that might be built before the force could be further expanded.

In addition, there was still a residue of the 1962 McNamara mission of "damage limitation" by which nuclear warheads beyond those required for assured destruction would be used to destroy the strategic offensive force of the other side. Furthermore, the calculus of destruction before launch and the penetration of ABM systems is subject to a very great "offense-defense asymmetry" of conservatism that in itself could account for the positive feedback and essentially divergent numbers of nuclear weapons, increasing almost without limit.

On the other hand, the agreement to strictly limit ABM, and to provide an effective buffer time during which the strategic offensive force could later be modified, laid the basis for the reduction of strategic warheads to the committed level of 3,000 to 3,500. Playing an important role, although not very often explicitly acknowledged, was the recognition also that the destruction of even vulnerable land-based "MIRVed" missiles before they could be launched in retaliation was not feasible, in view of the possibility of "launch under attack (LUA)" or "launch on warning."

So this calculus also drove the two sides to a capability of launch under attack, although the number of strategic offensive warheads did not decline to reflect fully the reality of LUA.

The problem of destruction before launch (DBL) was especially severe because the United States had voluntarily chosen to respond to the potential of a Soviet ABM system *(or* to grasp the fruit of technological advances in nuclear weapons and missiles) by deploying multiple warheads on our land-based missiles, thereby unilaterally introducing the potential for the Soviet Union to destroy three Minuteman-3 warheads with a single accurate Soviet nuclear warhead. The Soviets followed (in view of the fact that MIRVs were never put on the table in the initial SALT negotiations), thereby incurring on their side a tremendous vulnerability, especially in view of the greater reliance placed by the Soviet Union on intercontinental ballistic missile (ICBM) weapons in contrast to submarine-launched ballistic missiles (SLBM).

Under START, the multiplier of DBL due to the self-imposed vulnerability of MIRV will disappear with the elimination of land-based MIRVs on both sides, but on the other hand the number of warheads on either side will also be much reduced, and there will be greater sensitivity to the effect of an ABM system.

Some in the U.S. defense community still want to rescind the ABM treaty. They tend to believe in national security on a unilateral basis, as reflected in the 1980 presidential campaign literature of Governor Ronald Reagan, which stated that President Ronald Reagan would have a three-point program to build nuclear weapons to disarm the Soviet Union, and if the Soviets tried to respond, it would be so costly that they would destroy themselves economically. Russia is now in substantially more dire economic straits than was the Soviet Union, and the appeal of this program may be substantially larger to a small but influential minority in the United States.

Unfortunately, there is much misinformation, and even technical misinformation provided to the Russian legislature, that could lead to substantial missteps by the United States and by Russia.

For instance, a study[8] paid for by the BMDO and released publicly in February 1995 has been claimed to counter the analysis of Professor T.A. Postol of the Massachusetts Institute of Technology and his colleagues that argues that

[8] Lee, Laura T., et al. "The Abuse of Footprints for Theater Missile Defenses and the ABM Treaty" (U), SPARTA, Inc., McLean, Va., September 1994.

THAAD[9] has significant effectiveness against strategic ballistic missiles, *if* it is effective against missiles of 3,000-km range.

Unfortunately this BMDO-sponsored study has no "study" behind it—just the briefing charts, as explained to me by BMDO staff and the contractor. Furthermore, the results are *wrong,* although it is more difficult to determine that they are wrong if there is no written analysis that can be evaluated.

The key claim of the Sparta study is that for the missiles of range against which THAAD is to be deployed (up to 3,000 km), the ground-based radar in the terminal area can see the missile during its ascent phase, where the radar cross section is large because the missile is essentially broadside to the radar beam; the ICBM, however, is below the horizon in its boost phase and then presents a small enough nose-on angle to the radar so that it cannot be seen. The data shown for radar cross section vs. angle, however, and the sketch of the trajectory make it very clear that the 3,000-km missile is well below the horizon during any high cross-section phase of flight. Even shorter-range missiles need never present an aspect angle greater than 45 degrees, out to which, according to the cross-section data shown in the BMDO study, the cross section is very low.

So in this case one should not trust the material published by BMDO, on which BMDO policy, that of the Department of Defense (DOD), and presumably U.S. national security policy are based. Of course, one might point to errors in the analyses of some critics of DOD programs, but that seems to me quite irrelevant.

"Force on force" criteria for the acceptability of TMD advanced by an unnamed government official, and quoted in a *Washington Times* newspaper article of May 10, 1995, imply that "unless there is some kind of significant, meaningful, major, material capability against the other guy's strategic force, then that is a permissible TMD." This implies that only systems with capabilities against the entire strategic force are limited by the ABM treaty, so that one-on-one tests should not determine the criteria for regional or strategic systems.

Evaluation of the effectiveness of various systems must consider as a primary element "sensor integration"—even so simple as launch detection satellite cueing. For instance, SDIO Director Dr. Henry Cooper revealed that U.S. "Defense Support Program" satellites detected every Scud launched by Iraq during Desert Storm. And the U.S. Navy has recently discovered a substantial capability of a fleet of vessels against cruise missile or even theater ballistic missile attack, by taking seriously the integration of sensors on the various ships. Even in the early 1970s, the DOD testified about its concern with "SAM upgrade," one version of which was the networking of the Soviet SA-2 surface to-air missile sites, to provide a coherent ABM capability. It is not a simple job to establish the absence of such links.

[9] The Theater High Altitude Air Defense interceptor, of which the U.S. Army proposes to buy 1,442 missiles.

Such an interpretation would entirely destabilize the strategic scene, not least by forcing major actions in the near term by Britain, France, and China, and also forcing Russia to modify its strategic force. Russia would be able to mobilize the resources to restore the effectiveness of its strategic force only by portraying the United States as an enemy bent on disarming strike, and by far the easiest way for Russia to increase the effectiveness of its planned forces is immediately to stop the START process.

On December 28, 1995, President Clinton vetoed H.R. 1530, the National Defense Authorization Act for Fiscal Year 1996, on the grounds, first, that it

> requires deployment by 2003 of a costly missile defense system able to defend all 50 States from a long-range missile threat that our Intelligence Community does not foresee in the coming decade. . . By setting U.S. policy on a collision course with the ABM Treaty, the bill would jeopardize continued Russian implementation of the START I Treaty as well as Russian ratification of START II—two treaties that will significantly lower the threat to U.S. national security, reducing the number of U.S. and Russian strategic nuclear warheads by two-thirds from Cold War levels. The missile defense provisions would also jeopardize our current efforts to agree on an ABM/TMD (Theater Missile Defense) demarcation with the Russian Federation.

The December 4, 1995, edition of *The Washington Times* includes the text of the U.S.-Russian "Agreed Framework" covering theater and regional antimissile systems, which was agreed to on November 17, 1995. The article reporting on this document notes that the original is classified SECRET and presumably reflects the Administration position on modifying the ABM treaty to permit certain types of TMD.

Revival of the Strategic Defense Initiative?

In May 1995, a letter from the leaders of several defense contracting corporations stated that spaced-based chemical lasers were essentially ready for deployment as a test system with a 4-m-diameter mirror and that within a few years an entire system of 12 SBLs with 8-m-diameter mirrors could be deployed at a cost of $15 billion. There is substantial pressure behind such deployments, with these lasers claimed to have an effective range of 3,000 km, each one claimed to defend effectively against missiles launched in the 10 percent of the surface of the Earth within its field of view, so that a constellation of 12 SBLs would provide an effective defense against a small threat, and 25 SBLs would provide a very substantial defense.

The letter claims that the lasers could be deployed each with fuel for something like 200 effective "shots," and that the primary purpose would be to destroy missiles in their boost phase. Of course, these lasers would as readily destroy ICBMs as theater missiles in boost phase, and they would strike at the heart of the strategic reductions that we have in process.

However, just as was the result of the analysis in the early days of the SDI, however effective such lasers might be, they could be destroyed as they were being deployed, by simple antisatellite (ASAT) measures.

There would be no reason in the 1990s for Russia to use the co-orbital ASAT that the Soviet Union tested some 22 times and that was described, for instance, in our article in *Scientific American.* [10] Instead, Russia would surely use a directascent ASAT, equipped with either a small nuclear warhead or a pellet warhead to destroy the rather fragile SBL, without imposing the requirement of sufficient accuracy to destroy by kinetic energy collision of the ASAT homing head itself. SDI proponents formerly argued that the deployed constellation of SBL would be mutually protecting, but such systems are not operational as soon as they are put into orbit, and the exchange ratio between the cost of an SBL and the cost of a direct-ascent ASAT is surely such that no such weapons in space could survive.

Nevertheless, the launch of space-based lasers to provide an effective component of strategic or theater defense would lead to a strategic confrontation that would not be optional but mandatory.

A Truly Cooperative Defensive System?

During the SDI program, there was promise of a defensive system that would "benefit" both the United States and the Soviet Union. President Reagan seemed sincerely to advocate a system that would actually protect both the United States and Soviet Union, destroying equally Soviet or U.S. missiles if they were launched. However, U.S. Defense Department personnel made very clear that not only was this not their goal but also that they would not even "share technology" with the Soviet Union. In a September 1986 debate in Dallas, Texas, the DOD representative chose his words very carefully to say that we would "share the benefit of defensive technology."

I likened this to the slave owner who "shared the benefit" of slavery. The slave owner obtained the profits, and the slave was protected and fed and housed, to some extent, so long as his product was sufficiently valuable to the owner. If one side has acquired a good defense (especially when combined with its strategic offensive force), it will be a tranquil (and compliant) world until the other side catches up, makes an end run, or miscalculates. That same kind of shared benefit, and tranquility, obtains when only one side has a disarming force against the other; and both sides know it.

Brilliant Pebbles Resurgent?

The x-ray laser, cherished development of Edward Teller and Lowell Wood and their colleagues at the Lawrence Livermore National Laboratory, seems truly dead and will surely remain so, so long as there is a ban on nuclear testing.

Not so for their next enthusiasm, "Brilliant Pebbles."

[10] Garwin, Richard L., Kurt Gottfried, and Donald Hafner. 1986. "Antisatellite Weapons," Scientific American, Vol. 250, No. 6, June.

One does not actually need to have an explosive warhead to conduct an effective intercept in space. Any significant crossing angle (with a low-orbit satellite moving at 8 km/s) would lead to relative velocities of 5 to 15 km/s, and the kinetic energy of the interceptor in the frame of the more massive strategic offensive weapon would correspond to many times the explosive energy per gram of high explosive. Indeed, the two are equal at a relative velocity that will give a kinetic energy of some 4,000 J/g, or about 2.8 km/s. At 10 km/s relative speed, each gram of interceptor has 12 times the kinetic energy of a gram of high explosive.

So although it had long been considered to use pellet warheads or for that matter orbiting pellet clouds to destroy objects in space, the public relations associated with the advocacy of SDI called now for "smart rocks"—as if one would be using a simple rock, but "smart" enough to be guided to a collision with the target.

Some went one step farther, claiming to increase the intelligence by making the rocks "brilliant" and reducing the size by the miracle of modem consumer electronics so that these were no longer smart rocks but "Brilliant Pebbles." Instead of a few kilograms as was originally proposed, the mass in orbit grew to on the order of 100 kg, for which one can make quite a reasonable interceptor, in principle. Thus was born the proposal to orbit something like 5,000 Brilliant Pebbles (BPs), to destroy strategic weapons during their boost phase. Of course, the BPs would need to be assigned to the boosting weapon and conduct an intercept with the precision necessary to strike the missile during boost phase. The BP would need to be self-guided, and there are counters to this, on the part of the ICBM itself.

However, in 1991 I published a paper,[11] and distributed widely a more extensive version,[12] contrasting the requirements for a direct-ascent ASAT to destroy Brilliant Pebbles with the requirements for the Brilliant Pebbles themselves. In every way the ASAT job is simpler. The nation that wants to destroy a constellation of BPs can take its time in doing so, and it can do so with very small homing interceptors supported by ground-based radars or lasers with a view of the engagement taking place in low Earth orbit—a capability that the BP itself cannot call upon.

Furthermore, the ASAT itself need detect the BP satellite and provide guidance from a distance of only a few kilometers, or for that matter a few hundred meters, given the accuracy with which the ASAT can be guided to the predicted position of the BP with the aid of ground-based radar or lasers.

The ASAT guidance and homing system need survive only for a few minutes, whereas that of the BP needs to survive for years in space, and the same is true of the power supply for the ASAT, which could be batteries,

[11] Garwin, Richard L. 1991. "Defense Is Easier from the Ground," Op-Ed piece, Space News, March 11-17.
[12] Garwin, Richard L. 1991. "Are Brilliant Pebbles the Counter to Stretched Scuds?", February.

whereas the BP would need to have a solar supply. Instead of a refrigerator for its infrared sensor (if any), the ASAT could carry liquid nitrogen or even liquid helium for the few minutes of its flight.

Thus it is clear that the ASAT job of wiping out the BPs is very much easier than that of putting up the BPs in the first place.

Instead of Brilliant Pebbles, Brilliant Eyes?

Brilliant Pebbles, of course, would be a clear violation[13] of the ABM treaty. As a result, it was proposed to deploy a system of "Brilliant Eyes," fewer than are necessary for a BP constellation, and the nominal job of which would be to refine the trajectory observations of warheads in midcourse, so that terminal ABM systems could work more effectively. I have been unable to see why the sensor of a terminal ABM system could not be given the capability to make an intercept without the trajectory "refinement" available from BP (if such could be obtained), nor do I understand why an "optical probe" launched from the terminal area on detection of a ballistic missile launch would not be a better idea than a Brilliant Eye.

I note, however, that Edward Teller proposed in the SDIO era that Brilliant Eyes should have all of the capabilities of Brilliant Pebbles, including rocket engines and homing systems that could boost the interceptor and conduct an intercept, but they would be deployed without the fuel and so would be "legal" under the ABM treaty.

I don't know any other judgment that such a system would be legal under the ABM treaty, any more than the Krasnoyarsk radar was legal. After all, that radar could have been maintained unlinked from the rest of the strategic defense system, or its beam could be held low enough to constitute a space track or early warning rather than ABM system, but there was no way in which such limitations could be verified or enforced. The same is true of BMDO claims that Brilliant Eyes are acceptable if they lack a direct communications link to interceptors.

Similarly, since the ABM treaty has the goal of providing the time buffer before deployment, to build and launch and test Brilliant Eyes that have a capability of Brilliant Pebbles would presumably not be allowed either.

A truly cooperative defensive system could hardly be objectionable, but we are not ready to deploy such a system. It would need to be accompanied by a regime that would make illegal the launching of missiles from one nation against another, which might indeed then lead to the disappearance of ballistic missiles entirely. But an effective ABM system and a commitment to upgrade it and to keep it effective would need to be operated by the United Nations and would require an operating committee and a voting procedure, all of which basis would need to be laid before a system was developed and deployed. I am not

[13] Article V: "1. Each Party undertakes not to develop, test, or deploy ABM systems or components which are sea-based, space-based, or mobile land-based."

saying that this is simple or that it can be achieved with confidence, but only that this groundwork must be laid before defenses can be developed without destabilizing the world.

A space-deployed defensive system, protected by international law and by the might and power of the nations subscribing to international law, would be quite a different consideration from a unilaterally deployed system. So that is of interest for the long term, although serious consideration may result in the rejection of such a system as infeasible, impractical, or undesirable.

One near-term and noncontroversial contribution to stability can be obtained by silo-cover sensors deployed cooperatively. That is, the United States would provide a small package for each Soviet silo cover, with the function of continuing to transmit a signal that cannot be simulated, so long as the sensor remains attached to the silo cover and the silo cover has not moved. The actual transmission would be handled by a Russian-supplied relay box. Russia would supply similar sensors to the United States. Each sensor would have its own cryptographic key (or a "public-key" system could be used) so that it would continually encrypt the time and the serial number of the sensor, so long as it remained attached to an unmoved silo cover.[14] High Russian officials explain that (like the Soviet rocket forces before them) their normal posture is one of responding when the first few nuclear explosions occur on Russian territory. Their other real option is to launch on warning of attack, before any explosions have occurred. And they insist that "delayed retaliation" is not an option for them. Hence the reliable assurance that U.S. missiles have not been launched is very important to the prevention of a massive launch of Russian strategic forces.

CONCLUSIONS

In the meantime, the consequences of unilateral deployment of space weaponry are so severe that I believe that it is necessary to revive the U.S.Soviet talks on banning antisatellite weapons and extend them to the banning of all space weapons as well as ASAT test and use. The ban on space weaponry would not affect communication satellites, navigation, satellite imagery, launch detection systems, or other satellites that are not actual weapons. Such a treaty could be agreed to between the United States and Russia and then opened for revision and subscription by all of the nations of the world, in analogy to the Biological Weapons Convention.

In addition to the traditional "national technical means of verification" (a euphemism for "satellite reconnaissance") authorized in the ABM Treaty of 1972 and in later treaties, new treaties ought to make provisions for societal verification, by which the text of the treaty is published widely in the states party, domestic law is established that makes it illegal for individuals to perform

[14] A sensor embodying these characteristics is deployed in cooperative monitoring of nuclear material stockpiles and may be viewed at the Cooperative Monitoring Center, Sandia National Laboratories.

those activities that the state has agreed not to perform, and the permission and responsibility are given individuals to report to a verification commission a state's violation of the agreement.

For the real threat of use of CW and BW against friendly cities, the most effective approach is to pursue vigorously the entering into force of effective bans on BW and CW and to have it understood that any violation of such a treaty (especially the use of BW or CW) would lead to the most severe response by the community of nations. A response with nuclear weapons could not be precluded. Passive defense should be emphasized, particularly for ships and the military, and should be considered for civil populations under particular threat.

Active defense of ships against cruise missiles and ballistic missiles should take advantage of the fact that only a very small region needs to be defended, if intercept takes place no farther than 5 km from the ship. This is a very different system from those that are discussed, which try to obtain a theater-wide capability.

Against accidental launch of strategic systems (far less likely under conditions of nontargeting and reduced readiness than it was formerly) cooperative control measures are far superior to BMD, and cheaper, too. The silo-cover cooperative monitor should permit reduced alert levels under normal circumstances.

Against a blackmail or rogue nation strategic threat, destruction of the strategic missile before launch should be considered, but a light ABM even against one or a few missiles is not a realistic option, in view of the necessity to intercept above the atmosphere, where countermeasures against nonnuclear intercept are quite feasible. A commitment to an effective light nationwide defense would (and technically should) lead to the use of nuclear-armed interceptors, which would be very similar to the classical ABM systems.

Of course, it is our *actions* that will influence the world, not our desires. Hence it is important to have some kind of understanding of the impact of various candidate actions on the world. By "actions" I mean not only development and deployment of weapons, but also speeches, negotiations, deception, and so on.

Our actions can have direct effects, but also indirect effects when others are moved to take or not to take actions of their own. In some cases, indirect effects can be much larger than direct effects, and they may come earlier as well. My own judgment is that it is not in our national security interest to interpret the ABM treaty as limiting subsystem performance only if it has actually been demonstrated against strategic-class reentry in actual tests. The effects of such an interpretation on our own security have not been thought through.

Thus, the United States should go ahead with dual-capable (aircraft, cruise missiles, and theater ballistic missiles) systems such as the PAC-3 upgrade of the Patriot, with remote firing of such interceptors from displaced radars and should rely for system performance on "launch-point cueing."

In general, there should be increased emphasis on passive defense against CW and BW and on a *balanced* defense against all threats. But we should not

confuse the wish for effective defense and the capability for effective defense, which confusion can jeopardize the uneasy security provided by deterrence against major potential threats.

APPENDIX I

Deterrence: Clash and Utilization of Value Systems

Robert B. Oakley, National Defense University

INTRODUCTION

The fundamental security of the United States is not under any near-term threat. Nevertheless, our interests are global in today's interdependent world and we must be concerned with and prepared to counter a wide variety of threats to them. There are a few self-evident places where potential threats would be so serious as to almost certainly trigger a vigorous U.S. response, most notably clear military aggression by Iraq or Iran in the Gulf or by North Korea in NorthEast Asia. However, given the uncertain, unstable nature of this post-Cold War world—and the internal debate about where our vital or important interests lie and what situations warrant what kind of U.S. action—it is exceedingly difficult to foresee and thus plan for a response to specific contingencies. Therefore, one should be prepared to deter/deal with (i.e., dissuade, coerce, prevent, or limit and contain if prevention fails) various categories of threat from various quarters using those instruments best suited to the particular situation. Some of these will not be responsive to the sort of conventional deterrent actions that we have developed for threats seen as likely during the Cold War, i.e., usually direct, cross-border aggression, sometimes indirect subversion with state support, or organized international terrorism with state support, plus readiness to respond to state-initiated nuclear attack.

Even during the Cold War period, there were domestic debates over whether certain deterrent actions proposed by different administrations were justifiable (e.g., direct assistance to the Contras). More so today than before, the decision to take deterrent action, and what kind to take, must take into careful consideration the capability of the administration to generate sustained public and political support.

The range of situations for which deterrent action is considered today is broader than before, with greater emphasis on purely or primarily internal upheavals in countries with little or no outside involvement, no evident major threat to our interests, and often with limited near-term potential for spreading into broader conflict. The type of deterrent action envisaged also tends to be more varied, ranging from decisive use of major military power by the United States (often with U.N. approval) to coalition actions (often under U.S. control) that envisage the restricted application of military force (i.e., peace operations). There is also a greater tendency to look to economic sanctions as a deterrent, an alternative or a supplement to the use of military force. This general situation,

deriving from a world in uncertain transition, is apt to prevail though at least the first decade of the 21st century. Over the past 5 years it has placed an increasing strain on our national security strategy decisions, and operations —within successive administrations and upon the armed forces as well as between the administration, the Congress, and the public. As one looks ahead, it will be even more important to understand clearly the nature of deterrence not only as we perceive it, but also as it is likely to be perceived by those who may be subjected to deterrence. The outlook, values, and interests of decision makers for states or subnational entities apt to be subjected to deterrence will in many instances be quite different from our own. In the increasingly frequent event that we do not wish to resort to all-out war, this will be of great importance to the success or failure of deterrence.

BACKGROUND

During the Cold War, these threats came mostly from states whose interests and whose concepts of incentives and disincentives resembled our own closely enough for us to understand and develop deterrents likely to be effective. Thus, in the near term or over the long term, the United States and its allies were able to prevail over the Soviet-Cuban threat to the Caribbean and Central America; keep in check the North Korean conventional threat to South Korea; put an end to Iranian attacks on shipping and threats to our friends in the Gulf, and repulse Iraq's attack upon Kuwait; strengthen the Association of South East Asian Nations (ASEAN) states to the point that they were no longer vulnerable to Vietnam or China; and keep the Soviet Union from direct military intervention in the Middle East. We were also able to negotiate safely with the Union of Soviet Socialist Republics (USSR) the dangerous missile and nuclear issues, as well as limit conventional forces in Europe.

However, there were several important exceptions where we failed to deter and/or win and where others had similar failures. The nature of these situations is instructive for issues of today's deterrence and the impact of different value systems. Our inability to prevail in Indo-China from 1960 to 1975, and the withdrawal of U.S. forces from Lebanon in 1983, came in part because we misperceived the cultures and motivations of those whom we were opposing. The Soviet withdrawal from Afghanistan in 1989 was primarily brought about not by U.S. actions but rather by the special motivation and the willingness of the Afghan Resistance to sacrifice, which the Soviets misperceived much as we did with respect to the Vietnamese. The U.S. decision in October 1993 to withdraw our forces from Somalia, after the failure to neutralize Aideed and his Somali National Alliance (SNA) militia, was comparable to Lebanon in 1983. Similarly, as discussed at our group's first meeting on February 22, 1995, Israel misjudged the culture and motivations of Egypt and Syria in 1973. It has also been unable to devise successful security strategies or tactics to deter Hisbollah in South Lebanon and Hamas in Israel and the Occupied Territories.

However, in the case of Hamas, events of October to December 1995 afforded genuinely hopeful prospects that its political and terrorist threats could be reduced over time to much less virulent levels and that the serious danger of it causing the collapse of the peace process between Israel and the Palestinians had been overcome. Persistence by Israeli and Palestinian National Authority (PNA) leaders in concluding the Oslo negotiations, the timely handing over of major West Bank towns to the PNA, and preparations for elections produced a major boost in popular support for Arafat and the PNA at the expense of Hamas and other Palestinian radicals, and an increased will and capability of the former to apply tough controls to the latter. In South Lebanon, Israel was able to reach an understanding with Syria (and indirectly with Hisbollah) that conflict would be confined to the security zone in South Lebanon, with no Katyusha rockets fired into Israel and Israeli attacks outside the zone. Guerrilla warfare by Israel and its Lebanese allies vs. Hisbyollah and others continued unabated inside the zone. When increasing Israeli Defence Force casualties and a close election campaign brought the Israel government to bomb and shell targets outside the security zone, the resulting political uproar internationally led to Israel again reverting to the previous formula of containing the ongoing conflict.

These examples raise the questions of commitment, morale, persistence, and sustained support for operations (especially when casualties continue) as vital elements of success or failure on both sides. Perceptions of these elements by the other party can be all-important, since they can lead one side or the other to believe it can break the will of the other over time. They also raise the question of containment vs. prevention, in both the short term and long term.

The Long Commission found that basic U.S. misunderstanding of the political, cultural, and psychological factors in Lebanon (and Syria) were behind the policy decisions that led to U.S. Marines in 1983 becoming a party to the conflict in Lebanon and therefore being subjected to attack by the same "unfair" or "inhuman" methods used by parties who did not have sophisticated weapons. We had a blind spot, caused in part by cultural misperception of the potential enemy and in part by a subconscious arrogance or feeling of military superiority and comfort stemming to some degree from our overwhelming technological and military capabilities. A roughly similar situation existed in Somalia 10 years later. In any event, not only the threat but also the actual use of carrier air and 16-inch guns failed to deter the attack on the Marines in Beirut; nor did helicopter gunships, AC 130s, and the Joint Special Operations Command deter Aideed's militias from attacking U.S. forces. In both cases, the failure to explain to the U.S. public and Congress what U.S. forces were doing, and why it was worth the risk, aggravated the backlash when trouble hit and brought about the withdrawal of the United States. This raises the question of our own value systems and how they can become a counterdeterrent, which is discussed below. It is a particularly important question given today's muddled perception of what the United States is willing to risk, and for what.

For Israel, the Agranot Commission found a similar cultural and psychological blind spot: the implicit assumption that Israel had taught the

Arabs such a lasting lesson in 1967 and had such an overwhelmingly evident advantage in military sophistication and technology that Egypt and Syria had to be bluffing in 1973 rather than positioning their forces for an actual attack.

VALUE SYSTEMS IN THE CURRENT WORLD

Today, the likelihood of cultural misperceptions, especially by the United States, is even greater. Absent the Cold War, there is much greater diversity as to what forms the basis for major decisions by other governments; and ethnicity, religion, tribalism, and other cultural factors have much more influence than at any time since before World War I, alongside or together with a broadened concept of nationalism. At the same time, there has been a quantum leap in effectiveness of popular pressure upon governments, whether in the larger number of substantially more democratic states, or in transition states (e.g., China and Russia) or in some authoritarian states where there are powerful "special interest" groups. These could be ethnic, as in Croatia and Serbia, or religious as in Iran. (They both have a special fervor that makes deterrence more difficult.) Even long-established governments in the industrialized countries of Europe and Japan are having greater difficulty making what we would consider to be "rational" decisions or policies, rather than going with popular opinion down what seems a misguided path. Moreover, the power and solidity of the traditional nation state are being eroded by a number of factors, including the much freer flow of information, international business, and people between and among countries. In some countries, the central government has collapsed completely or has been on occasion so constricted by subnational groups or movements of one kind or another as to be virtually paralyzed (e.g., the former Yugoslavia, Somalia, Liberia, Afghanistan, Georgia, Algeria, etc.). The world thus finds itself faced with subnational entities whose calculations and incentives and disincentives are at variance with those of most states. There are also transnational movements such as Islamic radicalism, narcotics trafficking, and international crime which are either new or stronger, replacing the transnational threats of communism or Arab nationalism in reinforcing national and subnational instability and threatening behavior.

A reasonably accurate understanding of the impact of cultural factors on the attitudes and action of states and subnational movements has thus become still more important when it comes to designing and employing an effective set of deterrents. For deterrence to be effective in individual instances, and to enhance the potential future dissuasive power of deterrence—as well as to increase popular political support for such actions at home—the United States will usually need to make use of some form of coalition, formalized (e.g., United Nations Security Council [UNSC]) or informal, and almost always including regional states.[1] This not only increases the total pressure (psychological,

[1] Even when the United States has unilaterally taken the political and military lead to establish a coalition and provided most of the military might for a coalition to deter (or prevent/roll back)

military, economic, etc.) on the one to be deterred and eases the burden on the United States (military and financial), but it also offers the greatest promise for our understanding which approaches will work the best for particular nations (or subnational groups) with their peculiar cultures or value system. The regional states usually have much deeper understanding than does the United States of these factors and are therefore of great help, even if their military weakness makes them seem so much less capable as to be of dubious value as participants. They can also enable the U.S. message to get across more clearly to the intended recipient, so that the perception better matches the intent.

Since many of the potential "lesser" threats that we might decide to deter are not threats to our security and are long term and often indirect in nature (i.e., threats to friendly states or regions that are not allies—and are not vital to our security), and since the difficulty of resolving the problem definitively is so great (i.e., totally mastering local factions/militias and/or establishing a durable, popular government), it may make great good sense to settle for containing a threat or problem. If a problem is not allowed to worsen and/or spread, containment could be adequate for our purposes. For instance, the immediate U.S. concern over fighting in Croatia and Bosnia was associated with fears of a repeat of Sarajevo triggering a Europe-wide war, via Macedonia, Albania, Greece, Bulgaria, and Turkey. Such a spread could have raised the stakes to the point that U.S. ground forces would need to join the rest of the North Atlantic Treaty Organization (NATO) in direct, large-scale intervention. Containment reduced the strategic negative effects of the fighting for the United States, even if the human and moral effects remained extremely negative.

Although the U.N. peace operation (UNPROFOR) failed to stop the fighting (and the United States refused to provide any ground forces for fear of possible casualties where its vital interests were not evident), it played an important role in international efforts that mitigated death and suffering and successfully prevented the conflict from spreading. However, the concern of the United States and other European governments continued to grow over (1) continued fighting, (2) damage to the future efficacy of NATO, as well as the United Nations, and (3) the possible eventual spillover. This led to new-found U.S. resolve and leadership, including the will to commit 20,000 ground forces,

what it considered to be unacceptable threats to its interests, it has gotten very substantial value out of the endorsement of the U.N. Security Council and sometimes the Organization of American States (OAS). This was notably the case in 1950 with Korea, 1965 with the Dominican Republic, 1990 with Iraq, 1992 with Somalia (UNITAF), and 1994 with Haiti. The endorsement has meant the difference between participation or nonparticipation of many states that contributed military forces and/or financing to these operations, which were outside the formal U.N. peacekeeping system. Without the UNSC (and OAS) endorsements and the additional participation, the U.S./coalition deterrent would have been much weaker in military and political power, as well as credibility and staying (or will) power. This weakness would have included the perception of the message by actual or potential enemies and the degree of support at home. In this sense "multilateralism" was of inestimably greater value than "unilateralism," very possibly the difference between success and failure, despite the major role of the United States.

and resulted in a peace agreement amongst warring parties and a 60,000-person force—under NATO command (IFOR) rather than the United Nations—to see to its implementation.

Another sort of containment situation going beyond what is normally considered deterrence could be a failed state such as Somalia, Liberia, Rwanda, or Burundi. Rather than press on to the ideal end result of a restored, stable democratic government—with the commitment, resources, time, and risk involved—it may be acceptable to stop the killing, lower the level of violence, and settle for imperfect local institutions that offer some hope for longer-term improvement. The international community has learned (the hard way) that it is most effective when it responds very quickly to the internal crisis in such situations, and when the nature of the response avoids neocolonization (significant nation building), especially when that requires long-term commitment of major military forces. The latter usually involves an intrusive outside role such as to produce a virulent, often violent backlash. Tragic as it might seem, limited humanitarian intervention to contain violence and care for the starving, the displaced, and refugees may well be the realistic answer.

In the case of Cambodia, the international community undertook not only to end the decades-old combined internal-external conflict, but also to remake civil society into a liberal democracy. In the face of impending major conflict with the Khmer Rouge faction, initial objectives were sharply scaled back, external involvement ended, more than 300,000 refugees returned, elections were held, and the operation was terminated. However, the scaled-back operation meant that Western-style democracy has not taken root in the traditionally alien environment. The United States, the Organization of American States (OAS), and the United Nations have undertaken a similar mission in Haiti. Major human rights abuses and violence have been sharply reduced and elections held freely. However, the nature of Haitian democracy, which appears likely to prevail over intentional norms, will almost certainly fall short of original objectives, and some sort of continued but reduced international security support has proved to be needed to prevent a new outbreak of major violence.

In trying to cope with this disorderly new world, the question of effective deterrence frequently comes back to the question of how vital is the perceived interest in deterring any particular situation and of the price one is willing to pay. The examples of Lebanon in 1983 and Somalia in 1993, and the U.S. reaction, are seen around the world as guidelines on how to defeat U.S. forces. This means that for any deterrence involving actual or potential use of forces to be successful there must be a careful decision, fully explained and justified to the public, to take at least limited casualties, plus a message conveying to the one to be deterred that the United States is indeed willing to run such a risk. (During Operation Restore Hope in Somalia prior to May 4, 1993, the Somalis saw that the U.S. military was well prepared and did not shrink in dangerous situations. By mid-October 1993 the Haitian thugs had seen from events in Somalia that the United States could be scared off.) The public perception on both sides can be critical in situations short of an all-out U.S. military

commitment. More broadly, this means not only a readiness to run some risks but also a constancy of purpose and consistency of policy so that friend and potential foe are satisfied that the United States is credible. As we have seen, the sudden U.S. shift to firmness and resolution in Bosnia produced a peace agreement and shored up international resolve. In Somalia, initially, and in Haiti, firmness and overwhelming force led to an unopposed entry by peace forces as it has done for IFOR in Bosnia.

Questions remain about the fate of the lofty political goals and overall security for local population after IFOR leaves Bosnia given the limitations placed upon its support for basically civilian objectives (including the police function and refugee reform). Questions also remain as to whether this apparent new firmness in U.S. foreign policy and world leadership will endure or whether there will be a return to apparent indecision, due to the nature of Clinton administration policy making, problems with Congress, and/or public lack of interest in active U.S. involvement abroad. The conclusions eventually drawn abroad on this basic question of commitment and consistency will have much more effect that any other single issue on the future effectiveness of U.S. deterrence.

In today's world, economics plays a huge role, and the U.S. economy has become very intertwined with and dependent on the economics of East Asia, West Europe, Mexico, and Canada, not merely oil from the Gulf. Threats to these economic interests are more subtle and less susceptible to conventional forms of deterrence, especially since their long-term importance to the United States is less visible and less generally understood in the near term when deterrent action must be taken if it is to be effective.

To protect our economic interests and security, the United States needs to nurture the web of interlocking global, regional, and bilateral economic, military, and political relationships it has initiated or helped others to develop over the past 50 years. This includes economic institutions and agreements such as the International Monetary Fund/International Bank for Reconstruction and Development (IMF/IBRD), regional development banks, the Organization for Economic Cooperation and Development (OECD), the G-7 (group of seven states [United States, United Kingdom, Germany, France, Canada, Japan, and Italy] for world economic issues), and the General Agreement on Tariffs and Trade/World Trade Organization (GATT/WTO); political or security institutions such as the United Nations, European Union (EU), NATO (and the Partnership for Peace), OAS, and ASEAN; and even the weaker Organization of Security Cooperation for Europe (OSCE), Organization for African Unity (OAU), Gulf Cooperation Council (GCC); and Organization of Islamic Countries (OIC). It also means formal bilateral military-to-military cooperation, as well as other special relationships with the Republic of Korea (ROK), Japan, Australia, Canada, Mexico, Egypt, and Israel, etc., and a variety of other bilateral and multilateral links between the United States and the rest of the world. In today's world, other organizations dealing with nonproliferation, the environment,

international crime, narcotics, terrorism, and so on, are becoming increasingly important.

In addition to institutions and formal agreements, there are a variety of more tangible means that the United States has used effectively to support other countries and thereby deter or help overcome threats to them. These include a U.S. forward military presence, on the ground or at sea, temporary or permanent. The basing or temporary stationing of U.S. forces in a country (or a region) whose stability it wishes to support, prepositioning of military equipment, and training of and combined exercises with local forces are all signals of U.S. intent. When coupled with the perception of strong U.S. will, they can be powerful deterrents. On the other hand, as has been seen in Saudi Arabia today (and was seen widely in the 1950s and 1960s), an overly visible U.S. military presence can generate a backlash.

By strengthening these relationships and demonstrating constancy rather than allowing them to be beset by doubt, the United States can increase its chances of heading off trouble and its capability of dissuasive deterrence, as well as its chances of success should preventive deterrence or containment be required. As discussed above, the regional and coalition elements of deterrence have assumed greater importance in today's world, particularly in dealing with the problem of different value systems.

CASE STUDIES

At this point, let us shift to a brief review of several case studies in deterrence where value systems have played a major role. An interesting case study is the Gulf War, where the United States began in early 1987 to develop a web of close military-to-military relationships with all five of the GCC states, employing instruments such as contingency planning, training (in the United States and in the region), joint exercises, and combined operations to protect shipping and the oil installations in the Gulf against Iranian (or Iraqi) attacks, using indigenous ports and airfields and involving local forces to a limited degree, consistent with their political caution and their military capabilities. U.S. military dispositions were worked out informally with Arab governments, with as little visibility as possible. There was also some involvement of naval vessels from the United Kingdom, France, and other NATO countries. The effectiveness of this U.S.-led operation (Earnest Will) in shutting down Iranian small-boat attacks on shipping, virtually stopping Iranian mine laying, and protecting offshore oil and gas platforms, was impressive to the Gulf states and to Iran. The latter concluded that the United States would persist and not be intimidated, particularly after the USS *Stark* was hit by a missile with 37 U.S. sailors killed and not a hint that the United States would terminate or curtail the operation. The perception of escalating U.S. pressure on Iran, plus increasingly effective Iraqi ground attacks, caused the Ayatollah Khomeni to "drink the bitter wine" and end the war.

The success of operation Earnest Will eased the doubts created by U.S. and Israeli covert arms supplies to Iran in 1985-1986 and regained ground in an area clearly considered vital to U.S. interests. The mutual confidence, knowledge, and habits of cooperation this developed were put to good military use after Iraq invaded Kuwait. Having these regional Islamic governments fully supporting and appearing alongside the U.S. and Western armies in Desert Storm, plus the unanimous U.N. Security Council endorsement, brought in other Moslem states that would otherwise not have participated (e.g., Egypt, Syria, and Morocco). Having such substantial Islamic participation in the coalition was critical in winning the local psychological operations (psyops) battle and defection of many Iraqi troops on the ground, as well as the much broader politico-religious struggle against Iraqi-supported and other radical Islamist groups in a number of Moslem states that tried to stir up animosity against the United States and against Desert Storm.

Preinvasion regional attitudes (as well as those in the United States) may have encouraged Saddam Hussein to think he could get away with invading Kuwait, and thus weakened any dissuasive deterrent. However, positive regional attitudes toward Desert Storm plus practical cooperation were essential for success in prevention. The net effect of the 1990-1991 campaign, continued close U.S.-GCC military cooperation (including numerous exercises and prepositioning), the high priority consistently accorded the Gulf by the Clinton administration, and the rapid muscular U.S. and Kuwaiti response to the October 1994 forward Iraqi troop movements (followed by rapid Iraqi withdrawal) demonstrated how effective more conventional dissuasive deterrence can be in an area of vital interest when it is executed properly. Iraq could have punched into Saudi Arabia or Kuwait had it moved at once in October 1994 but was obviously deterred by the daunting prospect of what would come in response, once the United States moved more military force forward and had the strong support of regional states. However, when the United States decided upon retaliation against Iraq in September 1996 because of Iraq's limited action against its Kurdish population—with no sign of a threat to the south—it displayed a lack of political and cultural sensitivity. This meant an overt refusal by earlier "coalition" powers such as Saudi Arabia, Egypt, and Western Europeans to allow use of their facilities for U.S. aircraft.

Another threat that is getting priority attention is the effort to prevent Islamist radicalism from toppling pro-West or "moderate" regimes like dominoes. It is instructive to look at the differences between Algeria and Egypt, on the one hand, and Morocco, Tunisia, and Jordan, on the other. In the latter three countries, a potentially explosive Islamic threat has been gradually defused over the past 5 years. With political encouragement and public and private economic help from Western Europe, the United States, and international and private financial institutions, the three have made serious inroads on socioeconomic problems, demonstrating their determination and capability to make progress in helping the population as a whole, as well as minimizing corruption. They have also allowed increased popular political participation,

including nonrevolutionary Moslem political parties, even while cracking down hard on radical revolutionary movements, Islamic and sectarian. In the case of Algeria, on the other hand, political participation by Islamic parties was suddenly nullified and has continued to be banned, while little progress has been made on the huge socioeconomic problems and the appearance of government corruption that brought popular support for the Islamist parties. Egypt is much closer to Algeria than to the other three in (mis)handling its problems, thereby giving Islamist radicals obvious advantages. It has had to fall back heavily upon oppression, which has had a positive security effect but is often a long-term boost to the opposition in such situations.

The wrong way for the West to approach the problem of Islam is to see it as a monolithic, hostile ideology, as we once saw Communism, or to see it as one that is susceptible to a military solution, one which NATO is able and ready to challenge. For very sound reasons, King Hassan of Morocco publicly chastised former Secretary General Claes of NATO for making a public statement to just this effect, thereby giving an amplitude of powerful political ammunition to Iran, Iraq (although hardly Islamist, it has feigned such a posture with some positive effect), Libya, the Sudan, and other radical regimes and movements (e.g., Armed Islamic Group of Algeria, Ghamma of Egypt). NATO and the EU subsequently found means to ease the angst in North Africa caused by Claes's statements, and the impression that the new "Mediterranean" consultative arrangements with Egypt, Morocco, Tunisia, Mauritania, and Israel were aimed at Islam. Had they not, it would have given a huge push toward a self-fulfilling prophecy, playing into the hands of Islamic radical opponents of the United States, NATO, and friendly Moslem regimes.

Here is an issue where clashing with or utilizing, understanding, or misperceiving foreign culture and its repercussions can be of immense import. Mishandling the Islamist issue can cause great long-term damage to U.S. and Western interests, given the powerful boost that religion provides to ordinary political power and motivation, and its potentially destructive effect on the stability of friendly regimes, availability of oil, control of weapons of mass destruction, proliferation of terrorism, and large-scale exodus of refugees (from North Africa to Europe). (The U.S.-led campaign over 15 years to force a change in Iran's basic world outlook by economic pressure has had little effect. This is in part because the regime in Teheran has been able to portray the United States as anti-Islamic. Up until the new U.S. policy toward Bosnia, Islamist propaganda had substantial negative effect in portraying the United States as refusing to be involved because the Bosnians under attack were Moslem.)

Another case study is Somalia, where adequate knowledge of Somali culture during Operation Restore Hope was combined with overwhelming force used with restraint, close cooperation with regional states, coordinated militarypolitical-humanitarian activities, and an excellent psyops/political-action campaign (aided by regional governments.) This combination succeeded in deterring any but isolated armed attacks on U.S. and other Unified Task Force (UNITAF) forces and kept casualties on all sides to a minimum. UNITAF

ensured that its Somali-language radio and newspaper had a different verse from the Koran every day, substantially reducing the effects of anti-U.S. and antiUNITAF propaganda by radical Islamist agitators. Using psyops and constant political dialogue, as well as the threat of force and continuous patrols to avoid surprise attack, the U.S. civilian and military leadership was able to restrain Aideed and the SNA, and other leaders and their militias, so that there were no major or sustained attacks on UNITAF, even at moments of considerable antiUNITAF anger and frustration for the Somalis. The United States and UNITAF were seen as basically even handed. They were able to get Somali factions and clans (warlords) to eschew force as the chosen means of political advancement, instead focusing them on peaceful political combat by means of their own choosing.

One of the main reasons for the later armed confrontation by the United States and the United Nations with Aideed and his SNA was a shift in attitude and political posture by the former and a breakdown in dialogue with the latter. This caused Aideed to see them as hostile to his vital long-term interest in becoming the president of Somalia and caused them to see Aideed as an enemy who should and could be "marginalized." The United Nations also stopped cooperating with regional governments (which were advising against confrontation with Aideed), thereby cutting off a vital communications channel. Another factor contributing to the violent confrontation was an impression by the SNA that—compared with the confident, alert UNITAF-—the U.N. forces were less vigilant and were confused and uncertain over command and control, and when and whether to use force. Thus, during the second half of the operation in Somalia, deterrence failed, much as it had 10 years earlier in Lebanon.

For Haiti the same basic combination of overwhelming force (used with restraint), political dialogue, and humanitarian and economic assistance effectively deterred potential armed resistance from Cedras and others, at the outset and subsequently. Like Aideed initially, their vital interests were not seen to be at risk (e.g., Cedras's freedom, fortune, and honor were all saved). Good psyops and the participation of a number of other Caribbean and some Latin American countries were an important part of the success achieved by the U.S.led multinational force during the first 15 months in Haiti.

A final case study is that of North Korea. By working closely with Japan, China, South Korea, and Russia, the United States was able to enhance its knowledge of how to deal with a rogue state developing a nuclear capability, as well as to increase the psychological and political pressure, and the possibility of economic pressure, on Pyongyang. Aware of the essentiality of regional support, the United States modified its hardline, "stick but no carrot" approach and adopted one combining the two. In exchange, it obtained meaningful political support from China and others. The meeting between former President Carter and the late North Korean leader Kim Il Sung was critical. Yet without a significant U.S. buildup of both its own and ROK military power, and credible signals of its intent for an even greater buildup, the regional states might well

not have decided to join in applying nonmilitary pressure to Pyongyang. And the latter might not have agreed to the "framework" compromise agreement which froze its nuclear program, allowed International Atomic Energy Agency inspection, and greatly reduced any near-term prospects for conflict. Without regional cooperation, the odds are high either that there would have been a major confrontation and very possibly an armed conflict with North Korea and/or that the latter would not have suspended its nuclear activities. The United States was obliged to calculate its real interests in continuing to try and force Pyongyang's hand on its earlier limited nuclear activities, running the risk of no regional support and the danger of a conflict, on the one hand, and, on the other hand, pursuing a peaceful regional political solution that could block Pyongyang's ambitious future nuclear program but not provide an early answer to its previous activities.

CONCLUSION

Paradoxically, although the United States is the only superpower and enjoys overwhelming military superiority without a real threat to its security, it must arguably pay closer attention than at any time since before World War II to the interests, values, and attitudes of other countries if it is to protect its own longterm interests. This extends to its ability to deter threats to these interests. The collapse of the Soviet Union as a power and of Communism as an ideology left the United States more powerful but also removed the threat that caused many countries to turn toward the United States for protection and be attentive to its interests. The absence of such a threat makes them more independent, an independence that is reinforced in many countries by their economic progress (both absolute and relative to the United States) and by a higher degree of dependence by the U.S. economy on that of other countries. This means that despite its power the United States will need to work harder to retain the relationships established over the past half century, notably by displaying greater constancy and decisiveness, continuing its active involvement with and commitment of its material as well as political assets to international problems, and not succumbing to internal pressures to turn radically inward. It also means paying more attention to the value systems of other states (and subnational players) and being more willing to move quickly to help them if there is a threat to U.S. interests, before a situation moves to the level of a major crisis and requires a major commitment of resources to be effective. Conversely, it means moving more rapidly to deter potential threats, again before they materialize into action or reach a buildup stage where a major commitment of resources is required for any type of preventive deterrence to be successful.

And, above all, it means dispelling the general impression abroad of the United States as turning every day more inward, unaware of or uninterested in the subtleties of the new world realities, assuming that, safe in its superpower status, it can retreat with impunity from its past commitments and make little

effort to maintain them, unwilling to commit more than sharply diminished material governmental assets for this purpose.

NAVY- AND MARINE CORPS-SPECIFIC IMPLICATIONS

Several specific implications for the U.S. Navy and Marine Corps emerge from looking at the above perspective in light of the study titled *The Navy and Marine Corps in Regional Conflict in the 21st Century* (National Academy Press, Washington, D.C., 1996), as well as U.S. military operations over the 5 years since Desert Storm ended.

First, the Navy must remain committed as a priority to keeping open vital sea lines of communication, to the degree possible in cooperation with other countries but by itself if need be. It must also remain committed to and capable of combined lower-scale logistics support for joint and combined/coalition operations.

Second, the Navy and Marine Corps will continue to have a critical role in deterring, or fighting if deterrence fails, major regional conflicts (MRCs). However, the likelihood of MRCs has gone down since the concept was developed during the Bottom-Up Review. Moreover, the best means of deterring an MRC or containing a conflict at a lesser level is by rapid action, visible on the ground to potential allies and foes. The nature and size of operations to be undertaken will vary tremendously, but few will require major combat, at least in the initial stage. This calls for continued emphasis on a flexible forward presence of highly capable personnel, weapons, and supplies, available for rapid action and prepared for any eventuality. Together with this, there should be the presence and perception of overwhelming U.S. forces relative to the potential or actual adversary. Perception is as important as reality, particularly in the early stages, so that psychological operations and other information warfare techniques can be particularly useful.

Third, in most cases the United States will seek and should be able to obtain coalition partners for its operations, especially after any initial, rapid U.S. unilateral action or action with a very limited number of others. This is important in terms of better understanding local value systems, generating political support, and conveying the U.S. message to potential foes, as well as reducing the burden on the United States alone, even if there are operational drawbacks to many potential coalition members which must be controlled. This means constant attention by the Navy and Marine Corps to forward presence and collaborative activities with military forces of other countries, both to solidify cooperative attitudes and to enhance interoperability. Combined exercises and operations, training, common equipment, and other activities should be stressed, with local forces, as well as the presence of U.S. forces.

Fourth, a better understanding of local and regional values is essential and can often be more important than firepower alone. This means more attention to area and language training and to the collection and, above all, analysis of intelligence. In the latter regard, nongovernmental sources are often better

informed on many important issues. The emphasis on forward presence, suggested above, can also contribute to this better understanding. Closer cooperation with the Department of State and local embassies, including the use of more political advisors, is another useful approach. This is true not only at the level of regional commanders in chief, but also at lower operational levels.

Fifth, related to all of the above, including local political and cultural considerations, availability of U.S. air power, and force protection, are the JulySeptember 1996 problems that beset U.S. forces in the Gulf. Too much of a highly visible U.S. military presence 5 years after Desert Storm began to take its toll in terrorist attacks upon U.S. facilities and refusal to allow U.S. aircraft to use local air bases to attack Iraq. This reinforces earlier arguments for relying much more on aircraft carriers rather than assuming the availability of land facilities.

Sixth, whether one likes it or not, in many situations military operations will be less than all-out war and will require close cooperation with civilian agencies of the United States and other governments, as well as international and nongovernmental or private voluntary organizations. Systematic training for such cooperation will be important for the future, particularly in the broad and variable concept of how to establish and operate most effectively civil military operations centers and/or humanitarian operations centers. For most limited military operations (as operations other than war), success will depend on a balanced approach combining four basic elements:

- Military and security matters (including police, arms control, demobilization, and the like),
- Humanitarian and economic matters (including relief, initial reconstruction, planning, and processes for longer-term rehabilitation),
- Political and diplomatic matters (with various local authorities and other governments), and
- Public information (both public affairs and psychological operations).

Combining the assets of the Marine Corps and the Special Operations Command can frequently provide the most effective immediate approach to such problems, followed by larger and/or long-term involvement of other forces if necessary.

These observations could easily be extended or amplified. However, they all seem to follow the general thrust of the *Regional Conflict* study in arguing for a lighter, more flexible Marine Corps able to deploy even more rapidly with strong Navy support and able to understand better and work more effectively with foreign countries. There should be no stinting on improved weapons and other technological advances. However, there should be recognition that in many operations, advanced technology and firepower will not be the total answer for success and, unless accompanied by other factors suggested above, could be counterproductive.

APPENDIX J

Controlling Instabilities Caused by Rogue Governments

Glenn A. Kent, Rand

THE EMERGING THREAT

We are now faced with the emerging threat of rogue nations capable of employing weapons of mass destruction (biological, chemical, or even nuclear). The more likely delivery systems include cruise missiles, ballistic missiles, and containers delivered by persons or land vehicles.

IMPLICATIONS OF THIS THREAT

The capability of a rogue nation to attack (or even threaten to attack) nearby neighbors with weapons equipped with nuclear, biological, or chemical warheads will surely create serious instabilities. A rogue government may come to believe that it can deter the United States from responding to its aggression by threatening retaliation against nearby neighbors or U.S. forces with weapons of mass destruction. And, thus, the rogue government may not be deterred from embarking upon the aggression in the first place.

Even a rogue nation, in going through the complex dynamics described above, must take into account that if the scenario plays out, it, as well, may be deterred from actually carrying out the threat of retaliating. If the leaders of a rogue nation indeed engaged in a retaliatory attack(s), they would face the threat that the United States might destroy their country—and could do so even with the use of conventional weapons. Also, the rogue leader will always have in mind that the United States possesses the capability to employ nuclear weapons anywhere and anytime.

However, the United States must take seriously that the scenario plays out and the rogue nation is not deterred from carrying out its threat and retaliates because the United States has responded to its aggression. Thus, the United States should (must) have the capability to limit damage if deterrence fails. Also, the capability of the United States to actually defeat or neutralize an enemy retaliatory attack will weigh heavily on the decision of whether the United States can build a coalition and respond in the first place.

A DEFENSE IN DEPTH

Surely the United States will make every effort to prevent the proliferation of weapons of mass destruction. Also, if preventing proliferation fails, as is likely to some degree, then the United States can take actions to deny an enemy

continued possession by counterforce operations against both the weapons themselves and the means of delivery. Note that these counterforce operations, although preemptive to launch of the enemy missiles, are not necessarily preemptive in a more strategic sense. The rogue may already be in violation of some treaty or sanction simply by the possession of such weapons.

If counterforce operations against possession fail (as surely they will to some degree), then the next barrier is to deter their use. The next barrier is to attack the missiles (cruise or ballistic) if, and after, they have been launched. The last barrier is in "passive defense."

So, we see that active defenses play an important role in the complex dynamics of who is deterring whom:

- They play a role in limiting damage if the rogue nation employs weapons of mass destruction in retaliation because the United States responded by large-scale military actions.
- Active defenses also play a role in the decision process by the rogue government as to whether or not to launch a retaliatory attack in retaliation to the U.S. response.
- Thus, they play a role in the decision as to whether or not the United States is deterred from responding.
- Thus, they play a role in whether the rogue nation is deterred from aggression in the first place.

The remainder of this paper focuses on one aspect of active defenses: namely, intercepting ballistic missiles after launch.

AN APPROACH TO INTERCEPTING BALLISTIC MISSILES AFTER LAUNCH

One of the likely threats is a ballistic missile equipped with small canisters loaded with biological or chemical agents. There is also the possibility of missiles equipped with nuclear warheads and midcourse decoys. Further, these canisters and decoys can be dispensed once the enemy missile gains the right velocity toward the target. It is clearly not feasible to provide enough interceptors at each target we intend to defend to engage all the canisters and decoys in the inventory of the rogue nation. This argues for operational concepts that enable the United States to engage the enemy missile itself prior to the event of dispensing the submunitions or decoys. In effect, putting a "cap" over the territory of the rogue nation means no ballistic missiles can exit the territory. The "cap" ensures that the agents will fall on enemy territory and not on the territory we seek to defend.

Intercepting missiles before "fractionation" means that time is critical. And since time is compressed, we need a very short time loop from sensor to assessor/controller to shooter. We need a short time between the time a sensor observes the launch and the time a "bullet" arrives at the booster or the postboost vehicle. For one thing, this means we need fast interceptors.

For defenses that use "hit-to-kill" vehicles (and other types of warheads), the "footprint"[1] of the defense battery depends critically on the rated velocity of the interceptor, the interceptor being the vehicle that gets the "terminal engagement vehicle" in the basket of the target. The footprint of an interceptor rated at 6 km/s is about twice that of an interceptor rated at 3 km/s. If the engagement time (time begins when sensors provide enough information for a controller to order the launch of an interceptor and ends just before the submunitions are dispensed) is 100 s, a 3 km/s interceptor is said to have a footprint of 300 km; similarly, a 6 km/s interceptor has a footprint of twice that, or 600 km. On the other hand, if the engagement time is only 50 s, then a 12 km/s interceptor is required to maintain a footprint of 600 km.

The interceptors could be deployed on an unmanned aerial vehicle. In this case, a footprint of 300 km would be effective, assuming, of course, that the vehicle can operate (dwell) over the areas where we are invoking a "cap."

The "interceptor" could be a laser beam deployed on some aircraft at high altitude. In this case, the speed of the bullets is quite impressive. However, the "footprint" may be constrained because the lethality decreases with range.

The interceptors could be deployed on ships. Employing interceptors on ships has the following attributes:

- Ships are high on access. Since "footprints" are constrained, having access to the right areas will be critical, and combat naval ships provide an effective means of gaining this access.
- For example, take the case of covering Iraq and Iran. Interceptors could be based on ships in the upper reaches of the Persian Gulf and the eastern reaches of the Mediterranean Sea. A simple survey on a globe reveals that a footprint of something like 1,000 km is required to cover Iran and Iraq from these sites. If sites for interceptors were also available in either the Caspian Sea or Pakistan, then a "footprint" of around 750 km would suffice. Also, the more remote areas of Iran could be covered by one (or both) of the other means discussed earlier-for example, interceptors with "hit-to-kill" vehicles on stealthy unmanned aerial vehicles deployed at high altitudes over designated areas.

[1] The metric of "footprint" is range (kilometers). The launch point of an enemy missile is said to be within the "footprint" of our interceptor if the interceptor can reach the missile before the missile dispenses the submunitions.

- For the case of covering North Korea, access to the right areas is straightforward with ship-based defense units.
- Ships can remain on station. Ships provide a platform that lends itself to being on station. So do land-based batteries (but such batteries depend on gaining rights from some foreign government).
- Ships can employ large interceptors. Ships allow for employing large interceptors, and large interceptors may be required to gain the velocities needed to gain the footprints required. The footprints "required," in turn, depend on which nation is being "capped" and on where our interceptors can be deployed.
- Ships are mobile. The defense battery can be positioned according to the direction of the national leaders.
- The one drawback is that interceptors off ships must traverse Earth's atmosphere and this poses a constraint on how fast the interceptor can go initially, until free of the atmosphere.

SUGGESTED ACTIONS

All of the above suggests that the U.S. Navy should undertake a serious effort toward formulating and defining operational concepts to place a "cap" over designated areas—a cap in the sense that no ballistic missiles can exit the area. Problems in defining a viable overall concept exist at four levels:

- At the *system level*—The concept of a superfast interceptor will be front and center. Trajectory shaping to arrive at the target in the shortest time possible will be critical. In fact, the overall concept for providing an effective "cap" over Iran and Iraq may indeed fail because of the limits on how fast interceptors can go.
- At the *tactical level*—The operational concept must define how to accomplish "dynamic engagement control." This involves the interaction of sensors, assessors, controllers, and shooters to make the time loops for engaging the target as short as possible, so that we have "iron" on target prior to dispensing.
- At the *operational level*—At this level, some "joint integrator" must address how these defense batteries on ships operate in concert with other types of defense batteries to achieve the overall operational objective—no enemy ballistic missiles can exit a designated area. For example, for certain countries, like Iraq and Iran, the footprints of the

ship-based batteries may be much less than desired, and we must employ other concepts to cover the more remote areas of that country.

- At the *strategic level*—At this level, we must address how to go about getting the needed political mandate for placing a "cap" over some designated area—the mandate coming from international organizations like NATO or the United Nations.

Also, we must address the question of maintaining the intent of the Antiballistic Missile (ABM) Treaty of 1972 in the presence of these theater missile defenses; the intent of the treaty, stated broadly, is to provide effective measures to limit the capability to defend the territory of each country—the United States and now Russia. Reconciling these two objectives will be tractable if we keep in mind that we are striving to maintain the intent of the ABM Treaty of 1972-—this being quite distinct from maintaining the language and approach inherent in the present treaty. Specifically, we limit the capability of defense units to defend the territory of the United States by where the ships (defense units) are deployed-not by how fast the interceptors can travel.

APPENDIX K

Deterrence-Quo Vadis?

David L. Stanford, Science Applications International Corporation

Deterrence polemics have all but disappeared from most newspapers and television, and with each new theme for our national security strategy, we are reading, seeing, and hearing less about deterrence. This is not as it should be. We have transitioned from earlier strategies where deterrence was a centerpiece to the current national security strategy theme of "Engagement and Enlargement" with its principal references to deterrence residing in a section titled "Combating the Spread and Use of Weapons of Mass Destruction." The current national security strategy also speaks of "deterring aggression."

The main part of the "Combating . . ." section is "Nonproliferation and Counterproliferation." Strategic deterrence in the traditional sense is covered by saying that we have the need for "nuclear forces sufficient to deter any future hostile foreign leadership with access to strategic nuclear forces from acting against our vital interests and to convince it that seeking a nuclear advantage would be futile." The Chairman of the Joint Chiefs of Staff, General John Shalikashvili, is more direct. He says in his 1995 Posture Statement, "While our nuclear forces are substantially smaller than they used to be, no other part of our forces is as vital. Over the long term, both our survival, and our ability to contend with conventional threats to our interests depend on a strong and wellmaintained nuclear force."

The strategy, however, makes no mention of conventional deterrence, nor does it emphasize deterrence as a central theme. Whatever the changes are in how deterrence may be featured or discussed in our strategy, continued thoughtful exploration of means to deter all manner of conflict and armed aggression is needed. This makes definitions important.

The paradigm that "strategic deterrence" or "deterrence" alone means "nuclear deterrence" is one that should be discarded. Another paradigm to be avoided is that deterrence involves only military means. In this essay, deterrence means deterrence in a general sense; strategic deterrence means deterrence at the strategic (not nuclear or strategic nuclear) level; nuclear deterrence means what it says; and conventional deterrence is deterrence with conventional means alone. With those definitions in mind, where *is* deterrence headed now that it has been upstaged—at least temporarily—as the centerpiece of our national security strategy?

It is likely that most people continue to believe that deterrence is important and that they have a reasonable grasp of the "carry a big stick" kind of nuclear deterrence that has prevented the outbreak of global nuclear war for almost 50 years. The need to "deter aggression" is also probably readily accepted; however, because of the plethora of regional and ethnic adversaries and the

vagaries of the post-Cold War era, the spectrum of what has to be deterred is much wider, and it is obviously much more complex to make deterrence work in this "new world disorder."

The problems that increase the complexity of achieving our national security objectives are not limited to proliferation of weapons of mass destruction and advanced weapons technology but are rooted in the great gulf between the "haves" and "have-nots," in the profusion of information increasingly available to the most distant corners of the world, and in our inability to understand the value structures of, and communicate clearly with, our potential adversaries. These factors make it more complicated to figure out how to make deterrence succeed.

To state it simply, deterrence theory is not substantially different from what it was in the past—although it has been broadened to include conventional means and must provide an affordable replacement for the stabilizing mechanisms that the bipolar power structure of the last four decades imposed on non-superpowers—but deterrence practice is in transition. Ashton Carter's emphasis on counterproliferation, and Paul Nitze's article discussing whether precision-guided munitions (PGM) are an alternative to nuclear weapons, illustrate some of the current thinking, as does Charles Allan's excellent *Washington Quarterly* 1994 article, "Extended Deterrence."

Other trends brought on by the demise of the bipolar world that bear on any new approach to the practice of deterrence include:

- Less predictability of the international scene and a recognition of the need for longer-range policy focus and better integration of the political, diplomatic, economic, and military elements of foreign policy;
- Fewer distinctions between tactical and strategic nuclear weapons;
- The insufficiency of any single conventional or nuclear system as a deterrent; and
- Self-deterrence from using nuclear weapons.

Although it continues to be necessary to maintain an appropriate level of nuclear weapons for the foreseeable future, the futility of mutual nuclear destruction appears to have been recognized by at least the major powers. For them, this has made possession of weapons of mass destruction more important than using them, and with the increasing precision and lethality of conventional weapons, some of the burden of deterrence will likely shift to conventional weapons. However, the strategic leverage and "status" associated with possessing nuclear weapons continues to attract nuclear aspirants who, through their nuclear weapons programs, seek a strategic advantage not provided to them by their geography, resources, politics, or conventional military power.

For the future, we should take direction from the fundamentals of the past that worked:

- The fostering of an international belief that the first use of nuclear weapons will inevitably and irrevocably result in the user losing everything he/she cherishes;
- A plan of action to be used if the nuclear "threshold" is crossed;
- Possession of a demonstrated capability that is affordable, does not violate basic national tenets, and whose readiness for employment is apparent but does not interfere with international intercourse and the conduct of our nation's daily life; and
- Convincing the world that seeking a nuclear advantage would be futile.

What does this mean for the future? Deterrence is first and foremost an exercise in selecting ways to influence potential adversaries to choose to act within commonly accepted behavioral norms. If we can understand the value structures of all parties, it should be possible for us to develop the means to affect those structures; however, despite advances in intelligence collection and analysis, we remain better at determining the orders of battle rather than the orders for battle or the intentions of our potential adversaries. Choosing an action to influence a potential adversary must be derived from an understanding of the operative influence mechanisms in that individual's value structure (or psychology), and of that we have little knowledge at present. Similarly, such influencing capabilities must be affordable, ever present, and not obtrusive, and they must not routinely violate a nation's freedom to pursue economic strength and protect its citizenry.

When the goal becomes influencing leadership to choose acceptable means of behavior to attain their goals, the particular influencing action we choose can fall anywhere in the spectrum shown in Figure K. 1 and will depend on the particular state of the relationships between the countries involved. The subsequent actions required will depend on the initial results and will move as indicated in Figure K. 1 as the results of the various actions take shape.

In normal usage, deterrence generally has a negative connotation; i.e., it is an action designed to influence an adversary not to do something we don't want him to do, but it is important to understand that positive and negative measures are part of an interrelated and continuous spectrum and that the type of influencing action can shift between negative and positive, and vice versa, depending on what the objective is.

What of the adversary who may be truly irrational and devoid of both influencing mechanisms and value structures? Lacking adequate information about an adversary's intentions and influencing mechanisms may also make us misunderstand and label as irrational an adversary who is, in fact, not so.

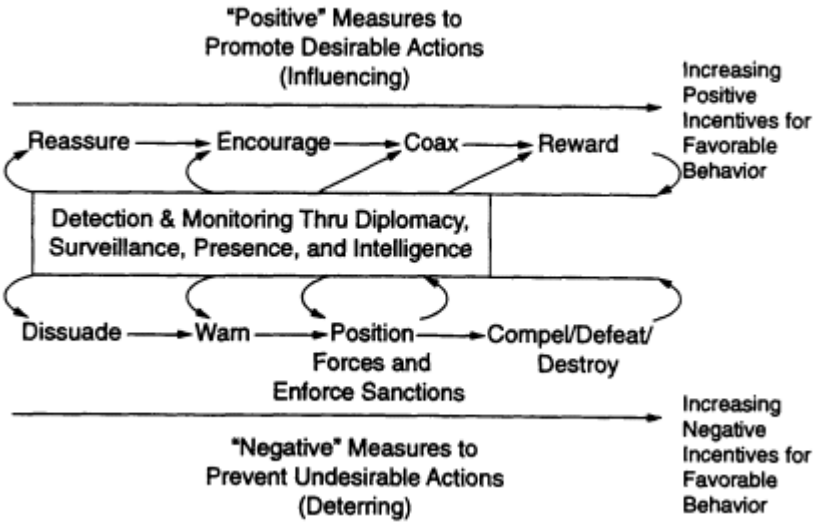

Figure K.1 A spectrum of influencing actions.

Lacking understanding, there is great risk in any action. Threats, escalation, or routine deterrence actions could prove to be provocative. Failure to act or an inadequate response could be regarded as a sign of weakness or a signal of tacit approval. Inappropriate methods and impreciseness of communications may send the wrong message. Inadequate feedback from influencing actions already taken may lead to erroneous conclusions about what the appropriate next step is. And, in the midst of such ambiguity, military actions may become the forced option, often without careful integration of the diplomatic and economic tools available.

Deterrence may be thought of as a kind of net or fabric with the warp made up of military capabilities and the weft made up of factors such as the military balance, our national principles, negotiating history and skills, recent responses to world crises, and national will to act (Figure K.2). The breakage of a few threads may weaken the overall fabric but not result in its failure, and new events or capabilities can add strength to the fabric. The failure of deterrence to achieve local deterrence objectives, such as in Bosnia and Somalia, probably frayed or broke threads in the net but did not destroy our capability to deter. North Korea is currently busy fraying a thread or two, but the Persian Gulf War and our recent response to indications of Iraqi force buildups forged strong new threads, reinforcing parts of the fabric. Such appropriate, but most assuredly different, actions in other areas will accomplish other results and over time will refine, clarify, and strengthen deterrent effectiveness (the tapestry).

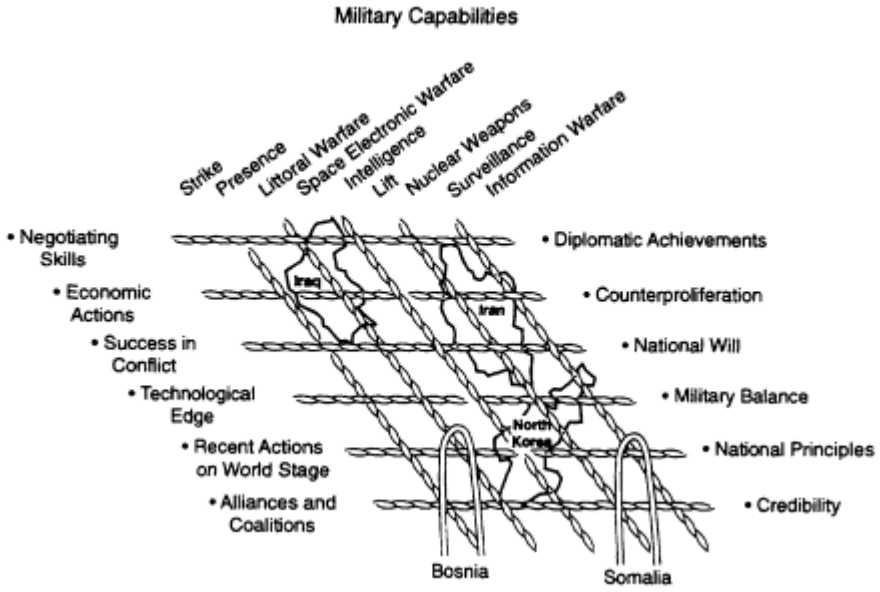

Figure K.2 The fabric of deterrence.

Any careful examination of deterrence should include an assessment of what deterrence can and cannot achieve. It is obvious to most that we cannot stop the proliferation of nuclear weapons or other weapons of mass destruction, nor can we put the nuclear genie back in the bottle, but, having taken and maintained the high ground with a strong history of responsible nuclear behavior, we have provided an example that is hard for anyone to challenge, and we have no choice but to continue to pressure and cajole as necessary to prevent or limit proliferation. The real test for us will come when another country first uses or sponsors the use of a nuclear weapon. Our responses to that event will set the deterrence "standard" for years to follow. The results of Rand's "The Day After . . ." study suggests that we are not fully prepared for such an occurrence.[1]

What we have done for decades and can probably continue to do is to deter global nuclear war. Although the number of nuclear weapons required to accomplish this continues to decrease through mutual agreement between the United States and Russia, the absolute lower limit of this requirement remains to be determined. The trends suggest it will be a number considerably less than

[1] Millot, Marc Dean, Roger Molander, and Peter A. Wilson, 1993. "The Day After. . ." Study: Nuclear Proliferation in the Post-Cold War World Volume I, Summary Report, Rand, Santa Monica, Calif.

START II levels. Perhaps it will be some arbitrary number, say 1,000. It would appear that even this relatively small number of weapons should be sufficient not only for overall deterrence but also for any Third World or rogue nation scenario, since it is hard to conceive of a situation where anything more than a few nuclear weapons would be required for terrorists, rogue nations, or Third World countries.

The challenge for the first part of the 21st century is to develop similar means and international "states of mind" that deter, dissuade, and influence potential adversaries from all forms of military aggression.

Over a period of more than 2 years, several deterrence seminar war games have been conducted in support of the Navy's Deterrence Joint Mission Area. These games examined various military capabilities for their deterrence potential in a variety of scenarios. This experience provided the basis for assessment reports to the Navy's Intermediate Requirements and Resources Review Board. The games have provided interesting insights into the deterrence process and produced results that focus primarily on, but also go beyond, the military component of deterrence.

In the earliest games, players were tasked with determining the various military capabilities that could be used for deterrence. In subsequent games, these capabilities were evaluated using a metrics system in a software utility that determined the "relative deterrence value" of each capability. In the most recent game, players used a modified version of the software to determine the relative deterrence priority of various military assets or systems. The cumulative results of these games have provided insights about the use of military capabilities in support of deterrence.

- The presence of forces, movement of forces, and ability to strike are important.

—The movement of forces into an area, even though some forces may already be present there, is more effective than simple presence; i.e., an adversary is particularly sensitive to changes in forces present.
—Precision weapons, stealth platforms, and hard-target kill capabilities have high deterrence value.
—Credible warfighting capability is key.
—Intelligence, targeting surveillance, and reconnaissance by themselves are not strong deterrent elements, but they are essential enablers of deterrence efforts and capabilities.
—Deterrence of proliferation of weapons of mass destruction has been largely ineffective, but inconsistent diplomacy and

our self-deterrence from preemption, bold strokes, or "disproportionate" responses have abetted the proliferation process.

—Systems that devalue an adversary's nuclear weapons, such as theater ballistic missile defense (TBMD), are increasing in importance.

—There is significant doubt that the United States has the will to use preemption systems.

- Information warfare, psychological operations, and deception operations are "soft," relatively low-cost, potentially high-payoff options whose deterrent value is difficult to capture quantitatively.
- Mobilization of reserves is a particularly effective deterrence action.
- Military actions can establish the conditions necessary for diplomatic and economic actions to be effective in resolving a potential conflict.
- Deterrence success is directly related to the level of understanding of a potential adversary's objectives, motivations, and perceptions.
- Most adversaries, particularly in the Third World, see our systems only at the macro level (carriers, amphibious ready groups, bombers, ground forces, etc.).
- The independence and mobility of naval forces make them the initial force of choice for influencing or deterrence actions. Forward deployment/movement to the area of ground forces, stealth aircraft, fighter aircraft, AWACS, JSTARS, and the like is also very effective, but CONUS-based forces have low deterrent value until they move toward or to the area.
- Submarine-launched ballistic missiles, Patriots, nuclear-powered submarines, and sea-based TBMD have high value for deterring use of weapons of mass destruction, but Red does not believe that the United States would preempt or use nuclear weapons in response to a conventional attack.
- Systems and capabilities that threatened Red's mobility or ability for surprise were of high deterrent value.

- If deterrence fails in a particular place, the failure provides no relief from deterrence obligations elsewhere but does offer a substantive opportunity to establish a new benchmark of deterrence credibility by the actions taken in response to the failure. *Quo vadis,* deterrence? Hopefully, back to the centerpiece where, if deterrence theory and practice are understood and used, it can ensure a structure and balance of national security forces that are optimized for a future we are only beginning to comprehend. What is needed:
- Revitalize and reaffirm a national goal of deterring all forms of aggression.
- Develop metrics that allow us to understand the capabilities needed to "destroy all that is cherished" by an aggressor.
- Construct a deterrence model to evaluate deterrence and deterrent actions.
- Define and understand the value structures of each potential adversary. Format the structure of our military toward the dual goals of both warfighting and deterrence of all forms of conflict.
- Establish closer correlation of our deterrence goals and our military force structure than currently exists.